EXHIBIT 1

STATE OF MICHIGAN
JOHN ENGLER, Governo.

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
RUSSELL J. HARDING, Director

OCT 05 2000

AIR QUALITY DIVISION
HOLLISTER BUILDING, PO BOX 30260, LANSING MI 48909
INTERNET: http://www.deq.state.mi.us/aqd

PUBLIC PARTICIPATION DOCUMENTS

For

S & S METAL PROCESSING
5032 NORTH DORT HIGHWAY, FLINT, MICHIGAN

PERMIT APPLICATION NUMBER 92-00

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DEQ Michigan Department of Environmental Quality

NOTICE OF AIR POLLUTION COMMENT PERIOD AND PUBLIC HEARING
NOTICE OF INFORMATIONAL MEETING

The Michigan Department of Environmental Quality is holding a public comment period until November 2, 2000, and a public hearing, on November 2, 2000, on S & S METAL PROCESSING'S, proposed installation and operation of a scrap metal shredder with cyclone collectors and a wet scrubber. The public comment period and hearing are to allow all interested parties the opportunity to comment on the Department's proposed conditional approval of an application for a Permit to Install. The scrap metal shredder with cyclone collectors and a wet scrubber will be located at 5032 North Dort Highway, Flint, Michigan. It has been preliminarily determined that the installation of a scrap metal shredder controlled by cyclone collectors and a wet scrubber will not violate any of the Department's rules nor the National Ambient Air Quality Standards. The facility's impact will not exceed 80% of the available increments for sulfur dioxide, nitrogen oxides, and particulate matter less than 10 microns.

Copies of the Department staff's analysis and proposed permit conditions are available for inspection at the following locations, or you may request a copy be mailed to you by calling 517-373-7088. Please reference Permit to Install Application Number 92-00.

AQD Internet Home Page - http://www.deq.state.mi.us/aqd

SHIAWASSEE DISTRICT OFFICE: Air Quality Division, 10650 S. Bennett Drive, Morrice, Michigan 48857 (Phone: 517-625-5515)

LANSING: Air Quality Division, Department of Environmental Quality, Hollister Building, 4th Floor, 106 West Allegan (Phone: 517-373-2856)

The public is encouraged to present its written views on the proposed permit action. Written comments should be sent to the Department of Environmental Quality, Air Quality Division, P.O. Box 30260, Lansing, Michigan, 48909, to the attention of the Permit Section Supervisor. All statements received by November 2, 2000 will be considered by the decision-maker prior to final permit action.

Persons with questions may fax them to 517-373-1265 or send them to the Department of Environmental Quality, Air Quality Division, P.O. Box 30260, Lansing, Michigan, 48909. Questions received prior to October 26, 2000 will be addressed in a question-and-answer document provided at the public hearing. In addition, staff will be available to answer questions outside the Auditorium during the public hearing.

Further, an Informational Meeting will be held on October 26, 2000, from 7 PM until 10 PM in the Auditorium of the Carpenter Road Elementary School, 6901 Webster Road, Flint, Michigan. During the Informational Meeting staff will be available to answer questions.

The public hearing will be held on November 2, 2000 starting at 7 PM in the Auditorium of the Carpenter Road Elementary School, 6901 Webster Road, Flint, Michigan. The sole purpose of this public hearing will be to take testimony on the record. The hearing will be recorded. Staff will not respond to questions made during testimony at this hearing. However, Staff will be available to answer questions outside the Auditorium during the hearing.

Individuals needing accommodations for effective participation at the hearing should contact Barb Wilcox at 517-373-2856 a week in advance to request mobility, visual, hearing or other assistance.

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

Lynn Fiedler, Supervisor, Permit Section

September 28, 2000

FACT SHEET
September 28, 2000

Applicant
S & S Metal Processing
5032 North Dort Hwy.
Flint, Michigan 48505

Purpose and Summary
The Michigan Department of Environmental Quality (Department), Air Quality Division (AQD) is proposing to act on a permit application from S & S Metal Processing (S & S) for the installation of a scrap metal shredder controlled by cyclone collectors and a wet scrubber. The permit application is identified as No. 92-00. The scrap metal shredder controlled by cyclone collectors and a wet scrubber is proposed to be located in an existing metal salvage yard at 5032 N. Dort Highway, Flint, Michigan. The proposed installation is subject to the Michigan Department of Environmental Quality, Air Quality Division Rules, National Ambient Air Quality Standards (NAAQS), and the federal Prevention of Significant Deterioration (PSD) Air Quality Increments for particulate matter, sulfur dioxide, and nitrogen oxides. The Department's Rules for Air Pollution Control require that S & S obtain a permit for the proposed installation.

Background Information
S & S's metal recycling facility in Flint includes a metal salvage yard, and metal shearing operations. The facility has been at this location since 1985. They are proposing to install a new scrap metal shredder capable of processing 60 tons per hour of vehicles, appliances, and industrial machinery. All gas tanks, batteries, automotive fluids, such as gas, oil, and antifreeze, mercury switches and freon will be removed before the items enter the shredder. In order to minimize the particulate emissions from the shredder, cyclone collectors and a wet scrubber will be installed. This type of air pollution control equipment removes up to 90% of the particulate, including metals, from shredding operations.

Key Permit Review Issues
State regulations require proposed sources to demonstrate that all applicable air regulations are met and undergo a review of potential air quality impacts. The shredder controlled by cyclone collectors and a wet scrubber is subject to R 336.1301 and R 336.1331 that limit opacity and particulate emissions. The source has shown it will comply with all the Department's Rules. S & S has also demonstrated that the proposed shredder controlled by cyclone collectors and a wet scrubber will not exceed National Ambient Air Quality Standards (NAAQS), the PSD Air Quality increments, or the Department's health-based screening levels for toxic air contaminants. See attached rules and regulations fact sheet for a summary of these requirements.

A review of permitted metal shredders in the State of Michigan was conducted to determine the best type of air pollution control for the shredder. Other state agencies (Illinois, Indiana, Ohio, Texas, and Wisconsin) were also contacted to determine what they were requiring for metal shredders. Three types of control were identified: water injection to control particulate emissions, foam injection to control particulate emissions, and collection and treatment of particulate emissions using some type of wet scrubber system. The collection of particulate emissions and treatment with a wet scrubber was identified as the best and safest control for the metal shredder, therefore the cyclone collectors and wet scrubber were required.

Toxic air contaminants were also evaluated using Environmental Protection Agency and recycling industry guidance documents and sources. The toxic air contaminants that were identified and evaluated include chromium, manganese, lead, cadmium, nickel, copper, and mercury. To minimize the emission of toxic air contaminants, requirements were added to the permit to limit and prevent the shredding of certain types of materials. The removal of gas tanks, batteries, automotive fluids (gas, oil, antifreeze, etc.), mercury switches, and freon from all vehicles, appliances, and industrial machinery prior to shredding was required based on the toxics analysis.

Due to concerns previously expressed in the Flint area regarding lead emissions, additional review was completed. Children's exposure to lead is a very important public health issue because it can affect

mental development, and existing exposures for some children may already be at harmful levels. Exposure to lead occurs primarily from house dust and outdoor soils, with some additional exposure from drinking water, food, and air. The potential lead emissions from this facility, and deposition of lead to soil, were evaluated. These potential exposures would not significantly affect children's total exposures or be harmful to children. Also, the air level would be several hundred times lower than the national air quality standard.

In addition, S & S will institute a new program for control of fugitive dust. Dust emissions will be minimized from roadways and waste piles through the application of water or dust suppressants. Vehicle speeds on access roads will be limited.

Key Aspects of Permit Conditions

- Particulate controls must be operating at all times;
- Emission control system must achieve 90% pollutant removal efficiency;
- Emission control system operation must be continuously monitored;
- Control system subject to initial performance testing;
- Removal of gas tanks, batteries, automotive fluids (gas, oil, antifreeze, etc.), mercury switches, and freon from all vehicles, appliances, and industrial machinery prior to shredding;
- Malfunction abatement plan including a preventative maintenance program and corrective action procedures in the event of a malfunction for the operation of the shredder; and
- Program for control of fugitive dust on all plant roadways, yard, storage piles of scrap, and material handling operations.

Conclusion

Based on the analyses conducted to date, staff concludes that the proposed installation of the scrap metal shredder will comply with Michigan Department of Environmental Quality, Air Quality Division Rules. Based on this conclusion, staff has developed the draft permit conditions attached to this fact sheet. These conditions will ensure that the proposed facility operation is enforceable and that the applicant will perform sufficient monitoring and record keeping to determine compliance.

Before acting on these applications, the AQD is holding a 30-day public comment period and a public hearing to allow all interested parties the opportunity to comment on the Division's proposed action. The decision-maker will consider all relevant information received during the comment period and hearing before taking final action on the application. The decision-maker may add or revise conditions to address issues raised during the public participation process before approving the permit application.

FACT SHEET - STATE AND FEDERAL AIR REGULATIONS

State Rule	Description of State Air Regulations
R 336.1201	Requires an Air Use Permit for new or modified equipment that emits, or could emit, an air pollutant. However, there are other rules that allow smaller emission sources to be installed without a permit (see Rules 336.1279 through 336.1290 below). Rule 336.1201 also states that the Department can add conditions to a permit to assure the air laws are met.
R 336.1205	Outlines the permit conditions that are required by the federal Prevention of Significant Deterioration Regulations (PSD) and/or Section 112 of the Clean Air Act. Also, the same types of conditions are added to their permit when a plant is limiting their air emissions to legally avoid these federal requirements. (See the Federal Regulations table for more details on PSD.)
R 336.1224	New or modified equipment that emits toxic air contaminants must use the Best Available Control Technology for Toxics (T-BACT). The T-BACT review determines what control technology must be applied to the equipment. A T-BACT review considers energy needs, environmental and economic impacts, and other costs. T-BACT may include a change in the raw materials used, the design of the process, or add-on air pollution control equipment. This rule also includes a list of instances where other regulations apply and T-BACT is not required.
R 336.1225 to R 336.1232	The concentration of each toxic air contaminant present in the outdoor air must be less than specified levels. These levels, called the initial risk screening level (IRSL) for cancer causing air contaminatns and the initial threshold screening level (ITSL) for non-cancer causing air contaminants, are health-based standards. Air Quality Division Toxicologists develop these standards following the methods in the rules. The standards are designed to protect all humans, including the most sentitive populations such as the young, elderly, and ill.
R336.1279 to R 336.1290	These rules list equipment or processes that have very low emissions and do not need to get an Air Use permit. However, these sources must meet all requirements identified in the specific rule and other rules that apply.
R 336.1301	Limits how air pollution emissions are allowed to look at the end of a stack. The color and intensity of the color of the emissions is called opacity.
R336.1331	The particulate emission limits for certain sources are listed. These limits apply to both new and existing equipment.
R336.1370	Material collected by air pollution control equipment, such as dust, must be disposed of in a manner, which does not cause more air pollution.
R336.1401 and 336.1402	Limit the sulfur dioxide emissions from power plants and other fuel burning equipment.
R336.1601 to336.1651	Volatile organic compounds (VOCs) are a group of chemicals found in such things as paint solvents, degreasing materials, and gasoline. VOCs contribute to the formation of smog. The rules set VOC limits or work practice standards for existing equipment. The limits are based upon Reasonably Available Control Technology or RACT. RACT is required for all equipment listed in the Rules 336.1601 through 336.1651.
R336.1702	New equipment that emits VOCs is required to install the Best Available Control Technology (BACT). The technology is reviewed on a case-by-case basis. The VOC limits and/or work practice standards set for a particular piece of new equipment cannot be less restrictive than the RACT limits for existing equipment outlined in R336.1601 through 336.1651.
R336.1801	Nitrogen oxide emissions limits for larger boilers and stationary internal combustion engines are listed.
R336.1901	Prohibits the emission of an air contaminant in quantities that cause injurious effects to human health and welfare, or prevent the comfortable enjoyment of life and property. As an example, a violation may be cited if excessive amounts of odor emissions were found to be preventing residents from enjoying outdoor activities.
R336.1910	Air pollution control equipment must be installed, maintained, and operated properly.
R336.1911	When requested by the Department, a facility must develop and submit a malfunction abatement plan (MAP). This plan is to prevent, detect, and correct malfunctions and equipment failures.
R336.1912	A facility is required to notify the Department if a condition arises which causes emissions that exceed the allowable emission rate in a rule and/or permit.
336.2001 to 336.2060	Allow the Department to request that a facility test its emissions and to approve the protocol used for these tests.

FACT SHEET - STATE AND FEDERAL AIR REGULATIONS

Citation	Description of Federal Air Regulations or Requirements
Section 109 of the Clean Air Act – National Ambient Air Quality Standards (NAAQS)	The United States Environmental Protection Agency has set maximum permissible levels for six pollutants. These National Ambient Air Quality Standards (NAAQS) are designed to protect the public health of everyone, including the most susceptible individuals, the children, elderly, and those with chronic respiratory ailments. The six pollutants, called the criteria pollutants, are carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter less than 10 microns, and sulfur dioxide. All areas in Michigan are meeting the NAAQS. Further, in Michigan, State Rules 336.1225 to 336.1232 are used to ensure the public health is protected from other compounds.
40 CFR 52.21 – Prevention of Significant Deterioration (PSD) Regulations Best Available Control Technology (BACT)	The Prevention of Significant Deterioration (PSD) regulations allow the installation and operation of large new sources and the modification of existing large sources in areas that are meeting the NAAQS. The regulations define what is considered a large or significant source, or modification. In order to assure that the area will continue to meet the NAAQS, the permit applicant must demonstrate that it is installing the best available control technology or BACT. By law, BACT must consider the economic, environmental, and energy impacts of each installation on a case-by-case basis. As a result, BACT can be different for similar facilities. In its permit application, the applicant identifies all air pollution control options available, the feasibility of these options, the effectiveness of each option, and why the option proposed represents BACT. As part of its evaluation, the Air Quality Division verifies the applicant's determination and reviews BACT determinations made for similar facilities in Michigan and throughout the nation.
40 CFR 60 – New Source Performance Standards (NSPS)	The United States Environmental Protection Agency has set national standards for specific sources of pollutants. These New Source Performance Standards (NSPS) apply to new or modified equipment in a particular industrial category. These NSPS set emissions limits or work practice standards for over 60 categories of sources.
Section 112 of the Clean Air Act Maximum Achievable Control Technology (MACT) Section 112g	In the Clean Air Act, Congress listed 189 compounds as Hazardous Air Pollutants (HAPS). For facilities which emits, or could emit, HAPS above a certain level, one of the following two requirements must be met: 1). The United States Environmental Protection Agency has established standards for specific types of sources. These Maximum Achievable Control Technology (MACT) standards are based upon the best-demonstrated control technology or practices found in similar sources. 2). For sources where a MACT standard has not been established, the level of control technology required is determined on a case-by-case basis.

Notes:

An "Air Use Permit", sometimes called a "Permit to Install", provides permission to pollute the air up to certain specified levels. These levels are set by state and federal law, and are set to protect public health and welfare. By staying within the levels set by the permit a facility is operating lawfully, and public health and air quality are protected.

The Air Quality Division does not have the authority to regulate noise, local zoning, property values, truck traffic, or lighting.

These tables list the most frequently applied state and federal regulations. All regulations listed may not be applicable in each case. In addition, there may be other regulations that must be met. Please refer to the draft permit conditions provided to determine which regulations apply.

SUPPLEMENT to PERMIT No. 92-00
S & S Metal Processing
Flint, Michigan
DRAFT-August 17, 2000

GENERAL CONDITIONS

1. Rule 201(1) - The process or process equipment covered by this permit shall not be reconstructed, relocated, altered, or modified, unless a Permit to Install authorizing such action is issued by the Department, except to the extent such action is exempt from the Permit to Install requirements by any applicable rule.

2. Rule 201(4) - If the installation, reconstruction, relocation, or alteration of the equipment for which this permit has been approved has not commenced within 18 months, or has been interrupted for 18 months, this permit shall become void unless otherwise authorized by the Department. Furthermore, the person to whom this permit was issued, or the designated authorized agent, shall notify the Department via the Supervisor, Permit Section, Air Quality Division, Michigan Department of Environmental Quality, P.O. Box 30260, Lansing, Michigan 48909, if it is decided not to pursue the installation, reconstruction, relocation, or alteration of the equipment allowed by this Permit to Install.

3. Rule 201(6)(a) - If this Permit to Install is issued for a process or process equipment located at a stationary source that is subject to the Renewable Operating Permit program requirements pursuant to R 336.1210, trial operation is allowed by this permit if the equipment performs in accordance with the terms and conditions of this Permit to Install and until the appropriate terms and conditions of this Permit to Install have been incorporated into the Renewable Operating Permit. Upon incorporation of the appropriate terms and conditions into the Renewable Operating Permit, this Permit to Install shall become void.

4. Rules 201(6)(b) - If this Permit to Install is issued for a process or process equipment located at a stationary source that is not subject to the Renewable Operating Permit program requirements pursuant to R 336.1210, operation of the process or process equipment is allowed by this permit if the equipment performs in accordance with the terms and conditions of this Permit to Install.

5. Rule 201(8) and Section 5510 of Act 451, P.A. 1994 - The Department may, after notice and opportunity for a hearing, revoke this Permit to Install if evidence indicates the process or process equipment is not performing in accordance with the terms and conditions of this permit or is violating the Department's rules or the Clean Air Act.

6. Rule 219 - The terms and conditions of this Permit to Install shall apply to any person or legal entity that now or hereafter owns or operates the process or process equipment at the location authorized by this Permit to Install. If the new owner or operator submits a written request to the Department pursuant to R 336.1219 and the Department approves the request, this permit will be amended to reflect the change of ownership or operational control. The request must include all of the information required by subrules (1)(a), (b) and (c) of R 336.1219. The written request shall be sent to the District Supervisor, Air Quality Division, Michigan Department of Environmental Quality.

7. Rule 901 - Operation of this equipment shall not result in the emission of an air contaminant which causes injurious effects to human health or safety, animal life, plant life of significant economic value, or property, or which causes unreasonable interference with the comfortable enjoyment of life and property.

8. Rule 912 - The owner or operator of a source, process, or process equipment shall provide notice of an abnormal condition, start-up, shutdown, or malfunction that results in emissions of a hazardous or toxic air pollutant in excess of standards for more than one hour, or of any air contaminant in excess of standards for more than two hours, as required in this rule, to the District Supervisor, Air Quality Division. The notice shall be provided not later than two business days after start-up, shutdown, or discovery of the abnormal condition or malfunction. Written reports, if required, must be filed with the District Supervisor within 10 days, with the information required in this rule.

9. Approval of this permit does not exempt the person to whom this permit was issued from complying with any future applicable requirements which may be promulgated under Part 55 of Act 451, P.A. 1994 or the Clean Air Act.

10. Approval of this permit does not obviate the necessity of obtaining such permits or approvals from other units of government as required by law.

11. Operation of this equipment may be subject to other requirements of Part 55 of Act 451, P.A. 1994, and the rules promulgated thereunder.

12. Rule 301 - Except as provided in subrules (2) and (3) or unless the special conditions of the Permit to Install include an alternate opacity limit established pursuant to subrule (4) of R 336.1301, a person shall not cause or permit to be discharged into the outer air from a process or process equipment a visible emission of density greater than the most stringent of the following. The grading of visible emissions shall be determined in accordance with R 336.1303.

    a) A six-minute average of 20% opacity, except for one 6-minute average per hour of not more than 27% opacity.

    b) A visible emission limit specified by an applicable federal new source performance standard.

    c) A visible emission limit specified as a condition of this permit to install.

13. Rule 370 - Collected air contaminants shall be removed as necessary to maintain the equipment at the required operating efficiency. The collection and disposal of air contaminants shall be performed in a manner so as to minimize the introduction of contaminants to the outer air. Transport of collected air contaminants in Priority I and II areas requires the use of material handling methods specified in R 336.1370(2).

14. Rule 285 - Except as allowed by Rule 285 (a), (b), and (c), applicant shall not substitute any fuels, coatings, nor raw materials for those described in the application and allowed by this permit, nor make changes to the process or process equipment described in the application, without prior notification to and approval by the Air Quality Division.

15. The Department may require the applicant to conduct acceptable performance tests, at the applicant's expense, in accordance with R 336.2001 and R 336.2003, under any of the conditions listed in R 336.2001.

DRAFT SPECIAL CONDITIONS
DRAFT-August 17, 2000
(18 Special Conditions)

The following table constitutes the equipment covered by this permit for S & S Metal Processing.

Emission Unit ID	Associated Equipment
EU-SHREDDER	Scrap metal shredder with enclosure hood ducted to a cyclone and wet scrubber, a closed loop cascade cleaning system with cyclone, and associated conveyors and ductwork.

1. Visible emissions from the cyclone and wet scrubber exhaust portion of EU-SHREDDER shall not exceed a six-minute average of 10% opacity, except as specified in Rule 301(1)(a). **(R 336.1205, R 336.1301, and R 336.1901)**

2. The particulate emission from EU-SHREDDER shall not exceed 0.05 pound per 1,000 pounds of exhaust gases, nor 9.2 pounds per hour nor 40.0 tons per year, calculated on a dry gas basis. **(R 336.1205 and R 336.1331)**

3. The applicant shall not operate EU-SHREDDER unless the program for continuous fugitive emissions control for all plant roadways, the plant yard, all material storage piles and all material handling operations specified in APPENDIX A has been implemented and is maintained. **(R 336.1205, R 336.1371, R 336.1372, and R 336.1901)**

4. Within 180 days after commencement of operation, verification of particulate, cadmium, chromium, copper, lead, nickel, manganese, mercury, and zinc emission rates from the cyclone and wet scrubber exhaust portion of EU-SHREDDER by testing, at owner's expense, in accordance with Department requirements, will be required. Verification of emission rates includes the submittal of a complete report of the test results. No less than 30 days prior to testing, a complete stack testing plan must be submitted to the Air Quality Division. **(R 336.1001, R 336.1003, and R 336.1004)**

5. The applicant shall not operate EU-SHREDDER unless the cyclone with wet scrubber and the closed loop cyclone collector are installed and operating properly. **(R 336.1205, R 336.1301, R 336.1901, and R 336.1910)**

6. The applicant shall equip and maintain the wet scrubber portion of EU-SHREDDER with a pressure drop gauge and liquid flow indicator. **(R 336.1910)**

7. The exhaust gases from EU-SHREDDER shall be discharged unobstructed vertically upwards to the ambient air from a stack with the maximum dimensions of 24 inches by 24 inches at an exit point not less than 60 feet above ground level. **(R 336.1205, R 336.1224, R 336.1225, and R 336.1901)**

8. Within 180 days after commencement of operation, a malfunction abatement plan subject to review and approval by the District Supervisor, Air Quality Division, shall be implemented and maintained. **(R 336.1911)**

9. The applicant shall process a maximum of 60 tons per hour, 750 tons per day, and 72,000 tons per year of material through EU-SHREDDER. Hourly, daily and yearly records of the amount of material processed shall be kept on file for a period of at least five years and made available to the Air Quality Division upon request. **(R 336.1205, R 336.1224, R 336.1225, and R 336.1901)**

10. The applicant shall drain and remove, and properly dispose of all fluids from vehicles prior to shredding. Fluids include gasoline, motor oil, antifreeze, transmission oil, brake oil, power steering fluid, hydraulic fluid, and differential fluid. **(R 336.1224 and R 336.1901)**

11. The applicant shall remove the gas tank and battery from the vehicles prior to shredding. **(R 336.1224 and R 336.1901)**

12. The applicant shall remove and properly dispose of all mercury switches from vehicles, appliances, and industrial machinary prior to shredding. **(R 336.1224 and R 336.1901)**

13. The applicant shall remove and properly dispose of all freon or other CFCs/HCFCs from air conditioning units in vehicles, appliances, and industrial machinary prior to shredding. **(R 336.1224 and R 336.1901)**

14. The applicant shall not operate EU-SHREDDER unless the conveyor which carries the dry nonmetal materials is covered and a chute at the discharge end of the conveyor is in place. **(R 336.1301, R 336.1331, and R 336.1901)**

15. The applicant shall prevent fires from starting in the pile of nonmetal material through regular and frequent applications of water. **(R 336.1310 and R 336.1901)**

16. All nonmetal and waste materials generated by the EU-SHREDDER shall be contained and disposed of in an acceptable manner in compliance with all applicable state and federal rules and regulations. **(R 336.1702(a) and R 336.1901)**

17. The applicant shall not process any asbestos tailing or asbestos containing materials in EU-SHREDDER pursuant to the National Emission Standards for Hazardous Air Pollutants, 40 CFR, Part 61, Subpart M. **(R 336.1224, R 336.1225, and R 336.1901)**

18. The applicant shall maintain written monthly records of amounts and types of hazardous materials disposed of and method of disposal as a result of dismantling and shredding of vehicles. **(R 336.1224, R 336.1702(a), and R 336.1901)**

APPENDIX A

FUGITIVE DUST CONTROL PLAN

Shredder Plant and Roadways

1. The waste material will be wetted to the degree necessary to meet opacity limits. If needed, this will be accomplished by spraying the waste material supply piles with water prior to transport to the Shredder and/or injecting water into the shredding chamber.

2. The reduced waste material storage piles will be sprayed with water or a dust suppressant as required to reduce potential fugitive emissions, or will be covered with a tarp.

3. The drop height from the conveyor to the storage piles and from the front-end loader or grapple to the tub grinder will be kept at a minimum to reduce potential fugitive emissions.

4. Fugitive emissions around the Shredder and access roads will be controlled by spraying water with a water truck or through the use of a dust suppressant. A record of all application shall be kept on file and made available upon request to the Air Quality Division (AQD).

5. Speed of vehicles will be posted and limited to 10 mph.

6. AQD/MDEQ Inspection - The provisions and procedures of this plan are subject to adjustment if following an inspection and written notification the AQD finds the fugitive dust requirements and/or the permitted opacity limits are not being met.

7. All roadways/plant yard shall be swept, as needed, between applications of fugitive dust control compounds.

EXHIBIT 2

STATE OF MICHIG

2001

JOHN ENGLER, Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY

"Better Service for a Better Environment"

HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7973

INTERNET: www.deq.state.mi.us

RUSSELL J. HARDING, Director

REPLY TO:

AIR QUALITY DIVISION
PO BOX 30260
LANSING MI 48909-7760

December 27, 2000

Dear Interested Party:

I would like to thank you for attending the public hearing and/or commenting on the permit application, submitted by S & S Metal Processing to the Department of Environmental Quality (Department), asking to install a scrap metal shredder with cyclone collectors and a wet scrubber, located at 5032 North Dort Highway, Flint, Michigan.

Pursuant to state requirements, the Department held a 30-day public comment period, which ended with the public hearing on November 2, 2000, on its proposed conditional approval of the permit. The Department received numerous comments during both the comment period and hearing and has prepared the enclosed Response to Comments Document. All comments were considered in the permit decision, and the attached Response to Comments Document provides an explanation as to why certain comments did not result in changes to the permit or answers to questions that were asked during the public hearing.

After careful consideration of the issues and pursuant to the delegation of authority from the Director of the Department, I have approved Permit to Install No. 92-00. As a part of this approval, in consideration of information submitted during the public participation process and subsequent analysis of that information, I have revised and added conditions as described in the enclosed Response to Comments Document. The final permit decision shall become effective immediately.

The following changes were made to the final permit to address the concerns raised by members of the public:

- A visible emissions limit on the enclosure hood for the shredder (Special Condition No. 2).
- Emission limits for pollutants of concern including lead, cadmium, chromium, copper, nickel, manganese, and mercury (Special Condition No. 4).
- A requirement for water spray control on the shredder for operation (Special Condition No. 7).
- All non-ferrous, non-metal, and waste materials must be stored in 3-sided bunkers and the total volume of materials cannot exceed 3,300 cubic yards (Special Condition No. 19).
- A written waste management compliance plan for management of all waste materials and operations will be required and must be approved by the District Supervisor before the process can operate (Special Condition No. 22).

I believe the additional requirements identified above, as well as the other permit requirements, provide safeguards for the protection of the health and welfare of the surrounding communities. Other significant permit requirements were identified in the draft permit and include the following:

- Particulate controls must be operating at all times.
- Emission control system operation must be continuously monitored.
- Control system subject to initial performance testing.
- Removal of gas tanks, batteries, automotive fluids (gas, oil, antifreeze, etc.), mercury switches, and freon from all vehicles, appliances, and industrial machinery prior to shredding.

- Malfunction abatement plan including a preventative maintenance program and corrective action procedures in the event of a malfunction for the operation of the shredder.
- A program for control of fugitive dust on all plant roadways, yard, storage piles of scrap, and material handling operations.

Thank you for your input regarding our review of this permit application. Enclosed is a copy of the Response to Comments Document and the final permit as I approved it. If you have any questions, please contact Ms. Julie Brunner, of our staff, at 517-373-7088, or you may contact me.

Sincerely,

Dennis M. Drake, Chief
Air Quality Division
517-373-7023

DMD:JB:PK
Enclosure
cc: Ms. Lynn Fiedler, Department of Environmental Quality
Mr. Mike Koryto, Department of Environmental Quality, Shiawassee District
Ms. Julie Brunner, Department of Environmental Quality

S & S METAL PROCESSING

RESPONSE TO COMMENTS DOCUMENT

December 27, 2000

PERMIT NO. 92-00

John Engler, Governor
Russell J. Harding, Director

Air Quality Division
Michigan Department of Environmental Quality

INTERNET: http://www.deq.state.mi.us

The Michigan Department of Environmental Quality (MDEQ) will not discriminate against any individual or group on the basis of race, sex, religion, age, national origin, color, marital status, disability, or political beliefs. Questions or concerns should be directed to the MDEQ Office of Personnel Services, P.O. Box 30473, Lansing, MI 48909.

Dennis M. Drake, Chief
Air Quality Division
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DEQ Michigan Department of Environmental Quality

I. PUBLIC PARTICIPATION PROCESS

Permit to Install Application No. 92-00 from S & S Metal Processing (S & S) is for the installation and operation of a scrap metal shredder with cyclone collectors and a wet scrubber located at 5032 North Dort Highway, Flint, Michigan. The public participation process for S & S's Permit to Install Application No. 92-00 involved providing information for public review including a Fact Sheet and proposed permit terms and conditions, a Public Comment Period, an Informational Meeting, a Public Hearing, and the receipt of written public comments on staff's analysis of the application and the proposed permit.

On September 28, 2000, a notice announcing the Public Comment Period, Informational Meeting, and Public Hearing was placed in the Flint Journal. Also, copies of the Notice Comment Period and Hearing, Notice of Informational Meeting, the Fact Sheet, and the draft terms and conditions, were placed on the Internet at the Department of Environmental Quality, Air Quality Division's Home Page (http://www.deq.state.mi.us/aqd). The notice provided pertinent information regarding the proposed action; the locations of available information; a telephone number to request additional information; the date, time, and location of the Informational Meeting and Public Hearing; the closing date of the Public Comment Period; and the address where written comments were being received.

The Informational Meeting was held on October 26, 2000, for Application No. 92-00. The Public Hearing was held on November 2, 2000, for Application No. 92-00.

The remainder of this document is a summary of comments received (both verbal and written) during the Public Comment Period and Public Hearing regarding the proposed permit and the Department's response. Changes to the final permit terms and conditions in response to comments received are explained in the summary.

II. SUMMARY OF COMMENTS RECEIVED

A. Equipment

1. **Comment:** The application is incomplete with regard to lack of actual equipment control efficiencies and emissions from the applicant. This makes the permit review, conditions, and enforcement questionable.

   Response:
   All available information was provided by the applicant or obtained by staff of the Air Quality Division. Stack tests were obtained from as many sources as possible, both in Michigan and in other states, for automotive shredders with similar control systems (i.e., scrubbers). While the data on actual emissions is limited, there is sufficient information to estimate the emissions and establish emission limitations. Most importantly, testing is required in this permit in order to validate the assumptions and data that were relied upon in developing emission limitations for this permit.

2. **Comment:** Is the control equipment the best technology that can be required?

Response:
The combination of water spray and wet scrubber required by this permit is the best available control equipment for automobile shredders. Other automobile shredders have water spray only, foam spray only, or water spray in combination with a wet scrubbing system. The wet scrubbers are either venturi scrubbers or cyclonic scrubbers. The emission test results for these systems do not show that one system works better than another system. In addition, the industry standard appears to be going away from wet scrubbers in order to avoid the problems associated with water disposal. Nonetheless, it was the judgement of the Air Quality Division staff that a wet scrubber (in combination with water spray) would provide better control than water spray only. The permit Decision Maker affirmed this determination and the applicant is required in the permit to include a wet scrubber.

3. **Comment:** Operating parameters for the scrubber and cyclone are not included in the permit, so how can proper operation be evaluated?

   Response:
   A malfunction abatement plan (MAP), subject to review and approval by the District staff of the Air Quality Division is required. Since operating parameters and maintenance plans are to be included in the MAP, specific operating parameters for the scrubber and cyclones were not put in the permit. The applicant has 180 days after the start of operations to determine the parameters where the system operates best. The permit requirement for the MAP was amended to state what is specifically required in the MAP which includes acceptable ranges for operation of the equipment, maintenance schedules, and contingency plans for equipment failure.

4. **Comment:** The shredder should be enclosed in a stable environment (building??) as recommended by the manufacturer. (Public comment based on Texas Shredder literature.)

   Response:
   It is physically impractical to enclose an operation of this nature. An enclosure would most likely afford little additional environmental protection beyond the control requirements of the permit and may potentially impose a significant safety hazard for employees. In discussions with the equipment manufacturer, Texas Shredder, the company representative stated that to his knowledge, shredders were not enclosed in buildings due to safety issues and the prohibitive cost of building an enclosure that would be safe for an operation of this nature.

5. **Comment:** The MDEQ-AQD did not require the most efficient particulate matter control system on the shredder and a higher particulate emission rate was set for the facility than a larger Wisconsin facility with a venturi scrubber.

   Response:
   The appropriate control was based on the information collected during the application review process (see response to comment no. 2 above). The overall particulate emission rate allowed by this permit is actually lower, not higher, than the Wisconsin facility. The Wisconsin facility has two stacks for particulate emissions from all operations, while the S & S shredder has only one stack. The combination of allowed emissions from the two stacks at the Wisconsin facility is greater than the emissions permitted for the S & S shredder.

B. Emissions

6. **Comment:** The permit should contain emission limits for pollutants of concern (lead, mercury, cadmium, chromium, copper, nickel, manganese, zinc) and adequate/continuous monitoring requirements. Opacity limits to determine particulate emissions are not enough to determine compliance with the particulate limit.

   Response:
   Due to concerns raised, emission limits for lead, mercury, cadmium, chromium, copper, nickel, and manganese were added to the permit. They are based on estimated emissions and health-based screening values. A stack test for verification of these emissions is part of the permit conditions.

7. **Comment:** Cumulative impacts of all permitted air emissions were not completely done. Lead was looked at but other toxics need to be evaluated and a monitoring program for ambient air levels or deposition rates of toxic pollutants in the vicinity needs to be instituted. The effect that shredder emissions could have on the surrounding community is unknown.

   Response:
   Cumulative impacts for lead and particulate matter were fully evaluated. Other toxic pollutants, primarily trace metals, were evaluated according to the health-based screening level requirement for new or modified sources of air toxics (R 336.1225). The predicted maximum ambient impact as determined by modeling did not exceed the initial threshold screening level or initial risk screening level for any of the metals predicted to be emitted.

   As for a monitoring program for ambient air levels, there is an air monitoring station one mile to the south of S & S at Whaley Park. Ambient air data is collected for the area for the criteria pollutants (suspended particulate matter, sulfur dioxide, nitrogen dioxide, carbon monoxide, and photochemical oxidants) and 13 metals. This data does not suggest that there is public health concerns for the background or incremental (cumulative) ambient air levels. This monitoring station is part of a statewide network and monitoring of pollutants is performed on a continuous basis. Mercury is not included as one of the 13 metals, elemental mercury concentrations will be evaluated separately. Ambient elemental mercury levels will be measured around the vicinity of the source to characterize fugitive releases of mercury from this process. Collection of this information will be part of a statewide effort to better characterize fugitive releases of elemental mercury.

8. **Comment:** Calculations for mercury emissions from the shredder ranged from 6 lbs/yr. to 400 lbs/yr. depending on the assumptions used. Potential mercury emissions, the health effects, and how to control mercury emissions were all issues raised. Questions were raised about the mercury removal efficiency of the cyclone and wet scrubber and the lack of a verifiable/enforceable program for mercury switch removal in the permit.

   Response:
   Due to concerns raised about mercury emissions, a limit of 0.03 pounds per hour for emission of mercury was placed in the permit. This calculates out to a maximum of 36 pounds per year of mercury. Since the applicant is required to actively remove mercury switches prior to shredding, the emission of mercury is expected to be below this

emission limit. In addition, this emission limit is well below health-based screening levels predicted by modeling. Removing devices such as switches is a management practice that is used in other states and Europe to lower potential mercury emissions since effective control of mercury emissions by air pollution control equipment is sometimes questionable.

An enforceable condition was added to the permit for the applicant to develop a program for mercury switch removal. This will be part of a required waste management compliance plan for management of materials that must be removed prior to shredding that the applicant must develop. It is subject to Air Quality Division District staff review and approval. The plan will include, at a minimum, identification, handling, storing, disposing, recycling, record keeping, and how the applicant will coordinate with other suppliers for responsible removal of materials of concern. The plan must be approved before the shredder can operate.

9. **Comment:** Release of dioxins and furans have occurred during accidental fires of automotive shredder residue (fluff). Accidental fires should be prevented at the applicant's facility.

   Response:
   Fires on-site in fluff piles are to be avoided, in addition to being a violation of open burning laws. Special Condition #18 is included in the permit to specifically address this issue. The applicant is to prevent fires by frequent application of water.

10. **Comment:** The requirement for a water spray in the shredder should be included in the permit, not just in the Fugitive Dust Control plan. Water spray devices are subject to freezing during winter and the facility should not be allowed to operate if the water spray is not fully functional.

    Response:
    Water spray control was added as Special Condition #7 due to concerns raised. All the automotive shredders use water or some kind of lubricant (foam) during shredding; otherwise, the shredder overheats and friction creates excess wear and tear on the shredder.

11. **Comment:** There is no visible emission limitation on fugitive hood emissions. A 5 percent opacity limit should be placed on the hood emissions and a 5 percent opacity limit should be placed in the Fugitive Dust Control plan.

    Response:
    A 5 percent opacity limit was placed in the fugitive dust plan for storage piles and roadways. As for the opacity limit on fugitive hood emissions, Special Condition #1 places a 10 percent opacity limit on the cyclone and wet scrubber exhaust, but fugitives from the hood are not covered. Therefore, a 10 percent opacity limit was placed on fugitive hood emissions in Special Condition #2. The difficulty with placing an opacity limit on the hood emissions is that the hood emissions are primarily steam, which must be excluded from visible emissions reading according to the established method for conducting visible emissions readings.

12. **Comment:** The capture efficiency of the shredder hood is questionable and particulate emission and mercury emissions from the hood are not quantified. Testing/quantification of these emissions should be done.

    Response:
    An opacity limit on the fugitive emissions from the hood was placed in the permit (also see response to comment no. 11 above). If visible emissions are excessive, then this could provide a way to ask for a redesign of the hood for better capture efficiency. Also, there is no EPA test method to test fugitive emissions directly from a hood of this nature.

C. Operations

13. **Comment:** There is no provision in the permit for how the applicant will be responsible for removal of toxic materials/compounds, disposal of the compounds, or how suppliers of the cars/appliances to the facility will be required to responsibly handle these compounds. Record keeping and periodic reporting of toxic/waste management activities should be part of the permit. The lack of review by the Waste Management Division is an issue.

    Response:
    Special Condition #22 was added to the permit requiring the applicant to develop a written waste management compliance plan to manage the materials that must be removed prior to shredding. It must address identification, handling, storing, disposing, recycling, record keeping, and coordination with other suppliers for responsible removal of items of concern. The plan is subject to Air Quality Division District staff review and approval. The applicant must also comply with all applicable solid and hazardous waste regulations that are administered by the Waste Management Division of the MDEQ. The Air Quality Division has asked the Waste Management Division to review the plan when it is proposed.

14. **Comment:** How will the scrubber water be handled? The permit does not address the fact that the water could be hazardous and how the applicant will dispose of it.

    Response:
    The applicant will have the scrubber water tested and disposed of by a licensed waste hauler.

15. **Comment:** The accumulation of auto shredder residue on-site should be limited to one week.

    Response:
    The permit requires wetting of waste piles to prevent fires and to minimize fugitive dust. As an additional requirement, a condition was added (Special Condition #19) requiring that non-ferrous, non-metal, and waste materials (i.e., fluff) must be stored in 3-sided bunkers. A maximum of 3,300 cubic yards can be accumulated on-site at any one time.

16. **Comment:** Many older appliances "will" or could contain motors that have PCB-containing starter capacitors. The permit should require removal of the capacitors.

Response:
Appliances manufactured before 1977 could have PCB-containing capacitors. The PCBs are in the oils within the capacitor. Special Condition #13 was expanded to clearly state that fluids must be removed from vehicles, appliances, and industrial machinery. Therefore, potential PCB-containing oils will be removed from materials prior to shredding.

17. **Comment:** Permit conditions are not adequate to regulate mercury preprocessing before shredding materials. Mercury-containing devices can be in vehicles and white-goods, preprocessing requirements should cover all sources of mercury. Quarterly reporting of mercury management activities should be included in the permit.

Response:
Special Condition #15 required mercury switches to be removed from vehicles, appliances, and industrial machinery prior to shredding. It was changed to state that "mercury-containing devices" must be removed to cover all sources of mercury. Other mercury preprocessing and record keeping requirements are addressed in the waste management compliance plan that is required by Special Condition #22.

D. Compliance

18. **Comment:** Concerns about inspections and the MDEQ's ability to keep the facility in compliance were raised because it does not appear that the MDEQ has been able to keep the Genesee Power Station in compliance.

Response:
If the applicant does not comply with the permit, the MDEQ will take the appropriate enforcement action.

19. **Comment:** The USEPA and MDEQ should conduct a multi-media compliance inspection of the facility before issuing the air permit.

Response:
The Air Quality Division has asked the Waste Management Division to inspect facility operations and review the waste management compliance plan.

AK/MCH

DEQ

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY — AIR QUALITY DIVISION

AIR USE PERMIT APPLICATION

For authority to install, construct, reconstruct, relocate, modify, or alter process, fuel-burning or refuse burning equipment and/or control equipment (permits to install are required by administrative rules pursuant to section 5505 of act 451, p.a. 1994 as amended).

FOR DEQ USE ONLY
APPLICATION NUMBER
92-00

Please type or print clearly. For further instructions, see the reverse side of this form or contact the Air Quality Division at 517-373-7023.

RECEIVED
MAR 30 2000

1. APPLICANT NAME: (Business License Name of Corporation, Partnership, Individual Owner, Government Agency)
S & S Metal Proc.

2. APPLICANT ADDRESS: (Number and Street)
5032 N. Dort Hwy.

CITY: (City or Village) Flint | STATE: MI | ZIP CODE: 48505

3. EQUIPMENT OR PROCESS LOCATION: (Number and Street) (If different than item 2)
Same

COUNTY: Genesee

CITY: (City or Village) FLint

ZIP CODE:

4. GENERAL NATURE OF BUSINESS:
Metal Recycling

5. EQUIPMENT OR PROCESS DESCRIPTION: A Description MUST Be Provided Here. (Attach additional sheets, if necessary. Include Source Classification Codes [SCC].)

80 x 104 Texas Shredder with cyclone close loop air system. 2500 H. power scorch air cooled wound motor, 600 RPM, 4160 volt 285 amp. S & S Metal Proc. plans to shred sheet metal, light steel and cars. Estimated tons per year, 72000. End product, clean frag to be sold to steel mills, North Star, Monroe, MI Grey Iron, Saginaw, MI ect.

Source classification code, #2650000003. Also, see plant layout, attached. Operating schedule for shredding, 8;00 a.m. to 5:00 p.m. 5 days a week, Monday through Friday, 52 weeks a year.

6. FACILITY CODES:
STANDARD INDUSTRIAL CLASSIFICATION (SIC) CODE: 5015 | STATE REGISTRATION (EMISSION INVENTORY) NO.: N 6 8 2 3

7. ACTION AND TIMING: (Enter dates for those which apply)	ESTIMATED STARTING DATE	ESTIMATED COMPLETION DATE
INSTALLATION, CONSTRUCTION, RECONSTRUCTION OR ALTERATION:	April 15, 2000	October 15,2000
RELOCATION:	NO.	
CHANGE OF OWNERSHIP:	NO	

8. NAME OF PRIOR OWNER, IF ANY: Commercial Metals | PRIOR AIR USE PERMIT NUMBER, IF ANY:

9. AUTHORIZED FIRM MEMBER CERTIFICATION:

PRINTED OR TYPED NAME: M. Scott Spooner | TITLE: Pres. | PHONE NUMBER: (Include Area Code) (810) 787-4825

SIGNATURE: M. Scott Spooner | DATE: 3/24/00

10. CONTACT PERSON NAME: (If different than name in item 9) SAME | PHONE NUMBER: (Include Area Code) SAME

11. DISPOSITION OF APPLICATION: FOR DEQ USE ONLY. DO NOT WRITE BELOW

DATE OF RECEIPT OF ALL INFORMATION REQUIRED BY RULE 203: 6-21-00 6-21-00 9/7/00

DATE PERMIT TO INSTALL APPROVED:* 12-27-00 | SIGNATURE: Dennis M. Drake

DATE APPLICATION / PERMIT VOIDED: | SIGNATURE:

DATE APPLICATION / PERMIT DENIED: | SIGNATURE:

*SUBJECT TO COMPLIANCE WITH ALL DEPARTMENT RULES AND THE CONDITIONS STIPULATED IN THE ATTACHED SUPPLEMENT.

SUPPLEMENT to PERMIT No. 92-00
S & S Metal Processing
Flint, Michigan
December 27, 2000

GENERAL CONDITIONS

1. The process or process equipment covered by this permit shall not be reconstructed, relocated, altered, or modified, unless a Permit to Install authorizing such action is issued by the Department, except to the extent such action is exempt from the Permit to Install requirements by any applicable rule. [R 336.1201(1)]

2. If the installation, reconstruction, relocation, or alteration of the equipment for which this permit has been approved has not commenced within 18 months, or has been interrupted for 18 months, this permit shall become void unless otherwise authorized by the Department. Furthermore, the person to whom this permit was issued, or the designated authorized agent, shall notify the Department via the Supervisor, Permit Section, Air Quality Division, Michigan Department of Environmental Quality, P.O. Box 30260, Lansing, Michigan 48909, if it is decided not to pursue the installation, reconstruction, relocation, or alteration of the equipment allowed by this Permit to Install. [R 336.1201(4)]

3. If this Permit to Install is issued for a process or process equipment located at a stationary source that is subject to the Renewable Operating Permit program requirements pursuant to R 336.1210, trial operation is allowed by this permit if the equipment performs in accordance with the terms and conditions of this Permit to Install and until the appropriate terms and conditions of this Permit to Install have been incorporated into the Renewable Operating Permit. Upon incorporation of the appropriate terms and conditions into the Renewable Operating Permit, this Permit to Install shall become void. [R 336.1201(6)(a)]

4. If this Permit to Install is issued for a process or process equipment located at a stationary source that is not subject to the Renewable Operating Permit program requirements pursuant to R 336.1210, operation of the process or process equipment is allowed by this permit if the equipment performs in accordance with the terms and conditions of this Permit to Install. [R 336.1201(6)(b)]

5. The Department may, after notice and opportunity for a hearing, revoke this Permit to Install if evidence indicates the process or process equipment is not performing in accordance with the terms and conditions of this permit or is violating the Department's rules or the federal Clean Air Act. [R 336.1201(8), Section 5510 of Act 451, P.A. 1994]

6. The terms and conditions of this Permit to Install shall apply to any person or legal entity that now or hereafter owns or operates the process or process equipment at the location authorized by this Permit to Install. If the new owner or operator submits a written request to the Department pursuant to R 336.1219 and the Department approves the request, this permit will be amended to reflect the change of ownership or operational control. The request must include all of the information required by subrules (1)(a), (b), and (c) of R 336.1219. The written request shall be sent to the District Supervisor, Air Quality Division, Michigan Department of Environmental Quality. [R 336.1219]

7. Operation of this equipment shall not result in the emission of an air contaminant which causes injurious effects to human health or safety, animal life, plant life of significant economic value, or property, or which causes unreasonable interference with the comfortable enjoyment of life and property. [R 336.1901]

8. The owner or operator of a source, process, or process equipment shall provide notice of an abnormal condition, start-up, shutdown, or malfunction that results in emissions of a hazardous or toxic air pollutant in excess of standards for more than one hour, or of any air contaminant in excess of standards for more than two hours, as required in this rule, to the District Supervisor, Air Quality Division. The notice shall be provided not later than two business days after start-up, shutdown, or discovery of the abnormal condition or malfunction. Written reports, if required, must be filed with the District Supervisor within 10 days, with the information required in this rule. [R 336.1912]

9. Approval of this permit does not exempt the person to whom this permit was issued from complying with any future applicable requirements which may be promulgated under Part 55 of Act 451, P.A. 1994 of the federal Clean Air Act.

10. Approval of this permit does not obviate the necessity of obtaining such permits or approvals from other units of government as required by law.

11. Operation of this equipment may be subject to other requirements of Part 55 of Act 451, P.A. 1994, and the rules promulgated thereunder.

12. Except as provided in subrules (2) and (3) or unless the special conditions of the Permit to Install include an alternate opacity limit established pursuant to subrule (4) of R 336.1301, a person shall not cause or permit to be discharged into the outer air from a process or process equipment a visible emission of density greater than the most stringent of the following. The grading of visible emissions shall be determined in accordance with R 336.1303. [R 336.1301]

    a) A six-minute average of 20 percent opacity, except for one 6-minute average per hour of not more than 27percent opacity.

    b) A visible emission limit specified by an applicable federal new source performance standard.

    c) A visible emission limit specified as a condition of this permit to install.

13. Collected air contaminants shall be removed as necessary to maintain the equipment at the required operating efficiency. The collection and disposal of air contaminants shall be performed in a manner so as to minimize the introduction of contaminants to the outer air. Transport of collected air contaminants in Priority I and II areas require the use of material handling methods specified in R 336.1370(2). [R 336.1370]

14. Except as allowed by Rule 285 (a), (b), and (c), applicant shall not substitute any fuels, coatings, nor raw materials for those described in the application and allowed by this permit, nor make changes to the process or process equipment described in the application, without prior notification to and approval by the Air Quality Division. [R 336.1201(1)]

SPECIAL CONDITIONS
December 27, 2000

The following table constitutes the process and process equipment covered by this permit for S & S Metal Processing.

Emission Unit ID	Process and Associated Equipment
EU-SHREDDER	Scrap metal shredder with enclosure hood ducted to a cyclone and wet scrubber, a closed-loop cascade cleaning system with cyclone, associated conveyors and ductwork, and all associated process activities including but not limited to management of waste materials associated with the shredding operations.

1. Visible emissions from EU-SHREDDER shall not exceed a 6-minute average of 10 percent opacity, except for uncombined water vapor. Opacity measurements shall be observed from the cyclone and wet scrubber exhaust portion of EU-SHREDDER. (R 336.1205, R 336.1301, and R 336.1901)

2. Visible emissions from the enclosure hood portion of EU-SHREDDER shall not exceed a 6-minute average of 10 percent opacity, except for uncombined water vapor. (R 336.1205, R 336.1301, and R 336.1901)

3. The particulate emission from EU-SHREDDER shall not exceed 0.05 pound per 1,000 pounds of exhaust gases, nor 9.2 pounds per hour nor 40.0 tons per year, calculated on a dry gas basis. (R 336.1205 and R 336.1331)

4. The air toxics emission rates from EU-SHREDDER shall not exceed the emission rates listed in the following table. (R 336.1205, R 336.1224, and R 336.1225)

Air Toxics	Emission Rate (lb/hr)
Lead	0.07
Cadmium	0.0005
Chromium	0.02
Copper	0.03
Nickel	0.006
Manganese	0.02
Mercury	0.03

5. The applicant shall not operate EU-SHREDDER unless the program for continuous fugitive emissions control for all plant roadways, the plant yard, all material storage piles, and all material handling operations specified in APPENDIX A has been implemented and is maintained. (R 336.1205, R 336.1371, R 336.1372, and R 336.1901)

6. Within 180 days after commencement of operation, verification of particulate, cadmium, chromium, copper, lead, nickel, manganese, mercury, and zinc emission rates from the cyclone and wet scrubber exhaust portion of EU-SHREDDER by testing, at owner's expense, in accordance with Department requirements, will be required. Verification of

emission rates includes the submittal of a complete report of the test results. No less than 30 days prior to testing, a complete stack testing plan must be submitted to the Air Quality Division. (R 336.1001, R 336.1003, and R 336.1004)

7. The applicant shall not operate EU-SHREDDER unless the water spray control on the shredder equipment is installed and operating properly. (R 336.1224, R 336.1301, and R 336.1901)

8. The applicant shall not operate EU-SHREDDER unless the cyclone with wet scrubber and the closed-loop cyclone collector are installed and operating properly. (R 336.1205, R 336.1301, R 336.1901, and R 336.1910)

9. The applicant shall equip and maintain the wet scrubber portion of EU-SHREDDER with a pressure drop gauge and liquid flow indicator. (R 336.1910)

10. The exhaust gases from EU-SHREDDER shall be discharged unobstructed vertically upwards to the ambient air from a stack with the maximum dimensions of 24 inches by 24 inches at an exit point not less than 60 feet above ground level. (R 336.1205, R 336.1224, R 336.1225, and R 336.1901)

11. Within 180 days after commencement of operation, a malfunction abatement plan subject to review and approval by the District Supervisor, Air Quality Division, shall be implemented and maintained. The malfunction abatement plan shall include, at a minimum, the optimum operating parameters for the cyclone and wet scrubber (pressure drop, water recycle rate, water tank cleanout schedule, etc.), maintenance schedules (pumps, fans, scrubber and cyclone cleaning, duct cleaning, etc.), and contingency plans for equipment failure (cyclone, scrubber, management of non-metal and waste materials stockpiled due to failure, etc.). (R 336.1911)

12. The applicant shall process a maximum of 60 tons per hour, 750 tons per day, and 72,000 tons per year of material through EU-SHREDDER. Hourly, daily, and yearly records of the amount of material processed shall be kept on file for a period of at least five years and made available to the Air Quality Division upon request. (R 336.1205, R 336.1224, R 336.1225, and R 336.1901)

13. The applicant shall drain and remove all fluids from vehicles, appliances, and industrial machinery prior to shredding. Fluids shall include, at a minimum, gasoline, motor oil, antifreeze, transmission oil, brake oil, power steering fluid, hydraulic fluid, and differential fluid. (R 336.1224 and R 336.1901)

14. The applicant shall not shred gas tanks and batteries. (R 336.1224 and R 336.1901)

15. The applicant shall remove and properly dispose of all mercury-containing devices from vehicles, appliances, and industrial machinery prior to shredding. (R 336.1224 and R 336.1901)

16. The applicant shall remove and properly dispose of all freon or other CFCs/HCFCs from air conditioning units in vehicles, appliances, and industrial machinery prior to shredding. (R 336.1224 and R 336.1901)

EXHIBIT 3

GUILD LAW CENTER

M. .URICE AND JANE SUC .R LAW CENTER FOR ECONOMIC AND SOCIAL JUSTICE:
A PROJECT OF THE NATIONAL LAWYERS GUILD

645 Griswold, Suite 1800 • Detroit, Michigan 48226
Phone 313-962-6540 • Fax 313-962-4492
E-Mail: mail@sugarlaw.org • http://www.sugarlaw.org

March 16, 2001

Dennis Drake, Division Director
Air Quality Division
Michigan Department of Environmental Quality
P.O. Box 30260
106 W. Allegan
Lansing, MI 48909-7760

RE: Waste Management Compliance Plan for S & S Metal Processing, Permit No. 92-00, Special Condition No. 22

Dear Mr. Drake:

The Guild Law Center ("GLC") is writing on behalf of Flint-Genesee United for Action, Justice and Environmental Safety ("FGUA") to make a formal request for public review and comment on the waste management compliance plan that S & S Metal Processing is required to develop and implement pursuant to Special Condition No. 22 of Permit No. 92-00 ("the S & S permit"), issued on December 27, 2000. We raised this issue with Robert Lamroeux, who is charged with reviewing the plan, but wanted to formalize that conversation. The waste management compliance plan is critical to the control of mercury and other toxic emissions from the shredder. Without public review and comment, there is no guarantee that the provision will provide any meaningful protection to the affected community. However, if no formal public review and comment is afforded, the GLC and FGUA ask that the MDEQ ensure that certain minimum standards are included in the plan.

I. The MDEQ should provide for public review of and comment on the waste management compliance plan..

Although the S & S permit includes some emission controls on the shredder stack, these measures will not provide effective control for mercury. According to MDEQ's own personnel, the majority of mercury likely to be emitted from the shredder will be in a form not readily controllable by a wet scrubber/cyclone system. E-mail of September 7, 2000 from Joy Taylor to Robert Sills. Although there was no explicit recognition of this fact in the public documents issued by the MDEQ, this assessment is reflected in the MDEQ's requirement that S & S remove all mercury switches from materials entering the shredder to limit mercury emissions. While FGUA applauds the inclusion of this provision, it is concerned that this restriction will be meaningless without effective, enforceable and verifiable procedures for

ensuring that the mercury switches and other mercury-containing devices are actually removed.

Effective restrictions on mercury entering the system are even more crucial given that there are serious disputes regarding the amount of mercury likely to be found in the shredder's source material and the amount of fugitive emissions that will probably be emitted from the shredder hood and from piles of shredded metal and shredder fluff. For example, based on a survey of only four salvage yards which sampled five cars per yard, the MDEQ assumed an average of 0.43 switches per car. The Ecology Center, a public-health and environmental organization that commented on the S & S permit, challenged this figure. Based on industry estimates of the number of mercury switches sold annually to the automotive industry and the number of cars manufactured each year, the Ecology Center estimated that the average number of mercury switches per car was more than double that amount. Under the Ecology Center's analysis, the S & S metal shredder could process, and potentially release, up to 140 pounds of mercury per year from cars alone.

In addition, mercury-containing components may be found in other scrap metal that may be processed by S & S. For example, scrapped furnaces may contain mercury-based thermometers. Industrial equipment processed by S & S may include mercury switches, mercury wetted relays, ignatrons, manometers and barometers and mercury gauges and meters. In a study of three northwest Indiana steel mills, the EPA found that the amount of mercury contained in such devices within each plant was, on average, 572 pounds and that this equipment was a potential source of significant amounts of mercury to the environment upon disposal. White goods may also contain mercury-based devices. None of these sources were considered in the MDEQ's calculations of potential mercury inputs or emissions.

Because the pollution controls are ineffective for mercury, a significant portion of the mercury entering the shredder will probably be released to the environment. The MDEQ did not dispute, or even bother to respond to, comments from FGUA and others that there would be fugitive emissions of mercury from the shredder hood and the piles of recycled metal and shredder fluff stored on site. If these potential sources of fugitive emissions are significant, stack monitoring alone cannot ensure that the facility is meeting its mercury emission limits. In addition, annual, or even quarterly, monitoring will not provide an accurate picture of the daily emissions from the facility. The emissions from S & S will vary dramatically as the composition of materials shredded varies from day to day. For these reasons, the waste management compliance plan is crucial in ensuring that mercury emissions are limited.

While the MDEQ appears to have recognized that an effective method of removing mercury and other toxics from materials to be shredded is important, it has provided little guidance for developing this plan. The permit only requires that the plan "address identifying, handling, storing, disposing, recycling and record keeping of the materials and how the applicant will coordinate with other suppliers for responsible removal of waste items." Permit No. 92-00, Special Condition No.

22. This extremely loose set of criterion for evaluating the waste management compliance plan provides no assurances to the community that this plan will provide an enforceable, verifiable method of effectively removing all or most mercury switches from cars and other appliances processed by the facility. The MDEQ has an obligation to provide more effective protection for the affected community.

Under Michigan law, facilities that emit toxic air contaminants are required to meet emissions limits based on T-BACT. Mich. Admin. R. 336.1224. Because there are no other truly effective controls built into the permit, FGUA believes that the waste management plan constitutes T-BACT for mercury emissions from the shredder. As noted by the federal Environmental Appeals Board ("EAB") in *In the Matter of Genesee Power Station*, 4 EAD 832, 856-57 (1993), a federal BACT must place the ultimate compliance responsibility upon the permitted party, must include enforceable limits or operating procedures and must provide a method of verifying compliance with these limits or procedures. Because the language describing T-BACT is substantially similar to the language describing BACT and because the state has represented T-BACT analysis as "equivalent to a federal PSD BACT analysis," *id.* at 847, a true T-BACT should meet these same requirements. The open-ended permission granted to S & S to develop a waste management compliance plan guarantees none of these things. Moreover, in *Genesee Power Station, supra*, the EAB assumed that public review and comment must be provided for any BACT determinations. *Id.* at 843. For the reasons given by the EAB in *Genesee Power Station, supra*, the GLC and FGUA believe that the controls on mercury emissions must be improved by including enforceable limits or operating procedures and methods of verifying compliance in the waste management compliance plan and, because development of this plan is essentially development of T-BACT, that public review of and comment on the waste management compliance plan is necessary in this case.

II. Even if formal public comment is not allowed, the MDEQ must require certain minimum standards in the plan to guarantee that it creates enforceable, monitorable and verifiable limits on the amount of mercury entering the shredder.

As noted above, to be effective and to meet the necessary requirements for BACT, T-BACT or their equivalent, the waste management compliance plan must contain enforceable terms and record-keeping requirements that allow for compliance monitoring and verification. As drafted, the current permit does not guarantee that any such measures will be implemented. If the MDEQ will not provide a formal opportunity for review of and comment on S & S Metal Processing's actual proposal, we ask that the MDEQ, at minimum, incorporate the following terms into the plan.[1]

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[1] The GLC and FGUA's proposed terms are based in part on model legislation developed by the Northeast Waste Management Officials' Association ("NEWMOA") in response to a Regional Mercury Action Plan adopted by the Conference of New England Governors and Eastern Canadian Premiers in June 1998. Further information on this initiative is available at http://www.newmoa.org/Newmoa/htdocs/prevention/mercury.

First, the plan should set target capture rates for mercury and other materials that are required to be removed from the waste stream. Because the total amount of these materials entering the system in the S & S source material is unknown, this target rate cannot be expressed as a percentage of the mercury or other materials entering the system, but rather, must be given as a set volume or mass. For mercury, for example, the target rate could be based on a reasonable estimate of the average number of mercury switches or other mercury-containing devices in each waste stream accepted by S & S Metal Processing (i.e., cars, white goods, manufacturing equipment, etc.) or derived from direct sampling of the materials actually processed by the facility. Any sampling should be conducted by the MDEQ or an independent consultant and must be designed to provide a representative sample that will produce statistically significant results. Total mercury capture could be calculated based on the number of switches or other mercury-containing components removed by S & S Metal Processing itself and its suppliers. While failure to reach this target capture rate might not be considered an automatic violation of the permit, it should trigger more intensive inspection requirements or force S & S Metal Processing to justify its failure to meet the capture rate.

Second, to the extent that the plan relies on suppliers removing components, the plan must require S & S Metal Processing to include language regarding component removal responsibilities in all supplier contracts. Moreover, it should require all suppliers to provide documentation of any components removed from materials supplied to S & S Metal Processing and the method of disposal of those components. One-time suppliers, with whom S & S Metal Processing does not have a contract, should be required to sign a declaration that they were informed of the items that must be removed from shredder source material and that these items were, in fact, removed. They should also be required to identify the manner of disposal. In addition, the MDEQ should consider requiring some kind of financial incentive for provision of clean materials to S & S.

Third, the plan must include concrete performance measures to ensure that the facility and its suppliers are meeting capture rates. These measures could include documentation of the amount of mercury-containing components removed per vehicle, documentation of the amount of mercury-containing devices disposed of by S & S Metal Processing and its suppliers; the place of disposal for these materials; and periodic measurements of mercury levels in the ambient air surrounding the shredder hood and the piles of recycled metals and shredder fluff. These measures should also include specific inspection requirements and procedures designed to ensure that all likely sources of mercury-containing components are removed. At minimum, S & S should identify the type and general location of mercury-containing devices likely to be found in any source material regularly accepted for processing and should outline a step-by-step inspection process for regularly accepted materials. In addition, S & S should establish a procedure for categorizing and inspecting unusual materials accepted for processing. The MDEQ should mandate that inspection verification forms and any forms completed by S & S Metal Processing's suppliers meet the requirements necessary to create personal liability for an employee or supplier who knowingly falsifies the document.

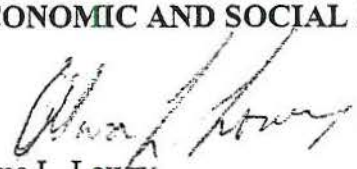
Fourth, the plan must include stringent record-keeping and reporting requirements. S & S employees must be required to document all vehicle inspections performed and to collect documentation required from the suppliers. S & S Metal Processing should be required to maintain records and compile useable summaries of its own vehicle inspections, the amounts of mercury and other hazardous materials that it removes from its source materials, the method of disposal for all these materials, the contractual requirements imposed on and declarations or verifications of compliance completed by its suppliers, and the results of any ambient air monitoring conducted on site. Most importantly, these records must be provided to the MDEQ periodically or otherwise maintained in a manner that allows the public direct access to them. Without public accountability, the community has absolutely no guarantee of compliance with these requirements.

In conclusion, we believe that the most effective way of ensuring that the waste management compliance plan, which is critical to effective control of mercury emissions from this facility, is adequate is to provide public review of and comment on S & S Metal Processing's proposal. Moreover, we believe that this step is supported by the requirements on development of T-BACT under Michigan law. However, if public comment is not provided for this plan, we urge the MDEQ to ensure that the provisions outlined above are included.

Please contact me at 313-962-6540 if you have any questions. We look forward to hearing from you on this issue.

Very truly yours,

NLG/SUGAR LAW CENTER FOR
ECONOMIC AND SOCIAL JUSTICE



Alma L. Lowry
Environmental Justice Staff Attorney

cc: Robert Lamrouex, District Engineer, Michigan Department of Environment
Julie Bruner, Michigan Department of Environment

EXHIBIT 4

APR 06 2001

STATE OF MICHIGAN

JOHN ENGLER, Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY

"Better Service for a Better Environment"

HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7973

INTERNET: www.deq.state.mi.us

RUSSELL J. HARDING, Director

REPLY TO:

AIR QUALITY DIVISION
PO BOX 30260
LANSING MI 48909-7760

April 4, 2001

Ms. Alma L. Lowry
Maurice and Jane Sugar Law Center
645 Griswold
Suite 1800
Detroit, Michigan 48226

Dear Ms. Lowry:

Thank you for your letter dated March 16, 2001, commenting on the Waste Management Compliance Plan (WMCP) required under Special Condition Number 22 of Permit to Install Number 92-00, issued to S & S Metal Processing. This letter has been prepared to respond to the comments in your letter.

Comment: The Michigan Department of Environmental Quality (MDEQ) should provide for public review of and comment on the waste management compliance plan.

Response: We acknowledge your concerns regarding the importance of a WMCP, specifically your comments regarding potential mercury emissions. Your specific comments will be helpful in our review of the proposed WMCP.

You made the comment that the WMCP constitutes Best Available Control Technology for Toxics (T-BACT) for mercury emissions, but does not meet the requirements for T-BACT because it is too open-ended and does not provide a method of verifying compliance with the limits. In fact, there are multiple requirements in the permit that are a result of the T-BACT review. These requirements include the emission limits specified in the permit; the control specified in the permit to achieve these emission limits, such as the wet scrubber, liquid level and pressure drop indicators on the wet scrubber, and water spray; and all monitoring and recordkeeping necessary to demonstrate compliance, such as stack testing and the WMCP.

The MDEQ recognizes the important role that the WMCP will play in enforcing the T-BACT requirements for mercury and that is precisely why Special Condition Number 22 was included in this permit. Special Condition Number 22, which requires the WMCP, has gone through the public participation process and sets the framework for the content of WMCP. The plan requires, at a minimum, procedures for identification, handling, storage, disposal, recycling, recordkeeping, and coordination efforts with their suppliers. The MDEQ will not approve a plan which does not include all of the details necessary to meet all of the criteria identified within Special Condition Number 22.

At this time, staff has had several conversations with the facility regarding the content of the plan, but has received little written information. We do not expect a draft plan from the company until late spring of this year. However, the facility is aware that they may not operate the shredder without having an approved plan in hand. Once the plan is received, we welcome comments with respect to whether the plan meets the requirements of Special Condition Number 22.

Comment: Even if formal public comment is not allowed, the MDEQ must require certain minimum standards in the plan to guarantee that it creates enforceable, monitorable, and verifiable limits on the amount of mercury entering the shredder.

Response: You have raised several important issues in this comment. However, since the company has not submitted their plan yet, it is not possible to respond to your specific comments at this time. Once a plan is received, your comments will be reviewed in addition to any other comments submitted while the plan is under review. Our intent is to incorporate the most environmentally sound control practices available at the time.

Please note that the MDEQ allows public review of any and all documents in our possession under the Freedom of Information Act (FOIA), provided they have not been determined to contain confidential information. Please feel free to use the FOIA process to obtain any information you feel would be useful to you. For more information on this process, please contact Mr. Robert Lamrouex, Air Quality Division, Shiawassee District Office, 10650 Bennett, Morrice, Michigan 48857, or call Mr. Lamrouex, at 517-625-4607.

Once again, I would like to thank you for your comments. A copy of your letter will be forwarded to the appropriate staff for review and consideration when reviewing the WMCP. If you need further information or assistance, please contact Mr. Robert Lamrouex at the phone number listed above.

Sincerely,

Richard D Johns

Dennis Drake, Chief
Air Quality Division
517-373-7023

DMD:RLL:JH

cc: Mr. Gerald Avery, MDEQ
Mr. Robert Lamrouex, MDEQ
Ms. Julie Brunner, MDEQ

EXHIBIT 5

Subject	All ages		18 years and over	
	Number	Percent	Number	Percent
RACE				
Total population	448	100.0	331	100.0
One race	429	95.8	314	94.9
White	106	23.7	93	28.1
Black or African American	305	68.1	209	63.1
American Indian and Alaska Native	6	1.3	4	1.2
Asian	0	0.0	0	0.0
Native Hawaiian and Other Pacific Islander	0	0.0	0	0.0
Some other race	12	2.7	8	2.4
Two or more races	19	4.2	17	5.1
HISPANIC OR LATINO AND RACE				
Total population	448	100.0	331	100.0
Hispanic or Latino (of any race)	15	3.3	11	3.3
Not Hispanic or Latino	433	96.7	320	96.7
One race	415	92.6	304	91.8
White	106	23.7	93	28.1
Black or African American	304	67.9	208	62.8
American Indian and Alaska Native	5	1.1	3	0.9
Asian	0	0.0	0	0.0
Native Hawaiian and Other Pacific Islander	0	0.0	0	0.0
Some other race	0	0.0	0	0.0
Two or more races	18	4.0	16	4.8

Source: U.S. Census Bureau, Census 2000 Redistricting Data (Public Law 94-171) Summary File, Matrices PL1, PL2, PL3, and PL4.

Subject	All ages		18 years and over	
	Number	Percent	Number	Percent
RACE				
Total population	**2,072**	**100.0**	**1,435**	**100.0**
One race	2,034	98.2	1,414	98.5
White	56	2.7	43	3.0
Black or African American	1,961	94.6	1,358	94.6
American Indian and Alaska Native	6	0.3	5	0.3
Asian	2	0.1	2	0.1
Native Hawaiian and Other Pacific Islander	0	0.0	0	0.0
Some other race	9	0.4	6	0.4
Two or more races	38	1.8	21	1.5
HISPANIC OR LATINO AND RACE				
Total population	**2,072**	**100.0**	**1,435**	**100.0**
Hispanic or Latino (of any race)	30	1.4	20	1.4
Not Hispanic or Latino	2,042	98.6	1,415	98.6
One race	2,005	96.8	1,395	97.2
White	51	2.5	38	2.6
Black or African American	1,948	94.0	1,351	94.1
American Indian and Alaska Native	3	0.1	3	0.2
Asian	2	0.1	2	0.1
Native Hawaiian and Other Pacific Islander	0	0.0	0	0.0
Some other race	1	0.0	1	0.1
Two or more races	37	1.8	20	1.4

Source: U.S. Census Bureau, Census 2000 Redistricting Data (Public Law 94-171) Summary File, Matrices PL1, PL2, PL3, and PL4.

QT-PL. **Race, Hispanic or Latino, and Age: 2000**

Geographic Area: **Census Tract 21, Genesee County, Michigan**

NOTE: Data not adjusted based on the Accuracy and Coverage Evaluation. For information on confidentiality protection, sampling error, nonsampling error, and definitions see http://factfinder.census.gov/home/en/datanotes/expplu.html.

Subject	All ages		18 years and over	
	Number	Percent	Number	Percent
RACE				
Total population	2,513	100.0	1,734	100.0
One race	2,425	96.5	1,702	98.2
White	1,795	71.4	1,348	77.7
Black or African American	547	21.8	291	16.8
American Indian and Alaska Native	20	0.8	16	0.9
Asian	13	0.5	10	0.6
Native Hawaiian and Other Pacific Islander	1	0.0	1	0.1
Some other race	49	1.9	36	2.1
Two or more races	88	3.5	32	1.8
HISPANIC OR LATINO AND RACE				
Total population	2,513	100.0	1,734	100.0
Hispanic or Latino (of any race)	156	6.2	92	5.3
Not Hispanic or Latino	2,357	93.8	1,642	94.7
One race	2,278	90.6	1,612	93.0
White	1,693	67.4	1,289	74.3
Black or African American	540	21.5	291	16.8
American Indian and Alaska Native	16	0.6	12	0.7
Asian	13	0.5	10	0.6
Native Hawaiian and Other Pacific Islander	0	0.0	0	0.0
Some other race	16	0.6	10	0.6
Two or more races	79	3.1	30	1.7

Source: U.S. Census Bureau, Census 2000 Redistricting Data (Public Law 94-171) Summary File, Matrices PL1, PL2, PL3, and PL4.

QT-PL. **Race, Hispanic or Latino, and Age: 2000**

Geographic Area: **Census Tract 20, Genesee County, Michigan**

NOTE: Data not adjusted based on the Accuracy and Coverage Evaluation. For information on confidentiality protection, sampling error, nonsampling error, and definitions see http://factfinder.census.gov/home/en/datanotes/expplu.html.

Subject	All ages		18 years and over	
	Number	Percent	Number	Percent
RACE				
Total population	**2,354**	**100.0**	**1,398**	**100.0**
One race	2,239	95.1	1,345	96.2
White	888	37.7	654	46.8
Black or African American	1,308	55.6	665	47.6
American Indian and Alaska Native	23	1.0	16	1.1
Asian	4	0.2	2	0.1
Native Hawaiian and Other Pacific Islander	0	0.0	0	0.0
Some other race	16	0.7	8	0.6
Two or more races	115	4.9	53	3.8
HISPANIC OR LATINO AND RACE				
Total population	**2,354**	**100.0**	**1,398**	**100.0**
Hispanic or Latino (of any race)	68	2.9	39	2.8
Not Hispanic or Latino	2,286	97.1	1,359	97.2
One race	2,172	92.3	1,306	93.4
White	853	36.2	632	45.2
Black or African American	1,292	54.9	659	47.1
American Indian and Alaska Native	19	0.8	12	0.9
Asian	4	0.2	2	0.1
Native Hawaiian and Other Pacific Islander	0	0.0	0	0.0
Some other race	4	0.2	1	0.1
Two or more races	114	4.8	53	3.8

Source: U.S. Census Bureau, Census 2000 Redistricting Data (Public Law 94-171) Summary File, Matrices PL1, PL2, PL3, and PL4.

QT-PL. **Race, Hispanic or Latino, and Age: 2000**

Geographic Area: **Census Tract 19, Genesee County, Michigan**

NOTE: Data not adjusted based on the Accuracy and Coverage Evaluation. For information on confidentiality protection, sampling error, nonsampling error, and definitions see http://factfinder.census.gov/home/en/datanotes/expplu.html.

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Subject	All ages		18 years and over	
	Number	Percent	Number	Percent
RACE				
Total population	2,104	100.0	1,401	100.0
One race	2,049	97.4	1,379	98.4
White	141	6.7	91	6.5
Black or African American	1,885	89.6	1,275	91.0
American Indian and Alaska Native	10	0.5	8	0.6
Asian	1	0.0	1	0.1
Native Hawaiian and Other Pacific Islander	0	0.0	0	0.0
Some other race	12	0.6	4	0.3
Two or more races	55	2.6	22	1.6
HISPANIC OR LATINO AND RACE				
Total population	2,104	100.0	1,401	100.0
Hispanic or Latino (of any race)	27	1.3	16	1.1
Not Hispanic or Latino	2,077	98.7	1,385	98.9
One race	2,031	96.5	1,366	97.5
White	134	6.4	85	6.1
Black or African American	1,880	89.4	1,272	90.8
American Indian and Alaska Native	8	0.4	7	0.5
Asian	1	0.0	1	0.1
Native Hawaiian and Other Pacific Islander	0	0.0	0	0.0
Some other race	8	0.4	1	0.1
Two or more races	46	2.2	19	1.4

Source: U.S. Census Bureau, Census 2000 Redistricting Data (Public Law 94-171) Summary File, Matrices PL1, PL2, PL3, and PL4.

QT-PL. **Race, Hispanic or Latino, and Age: 2000**

Geographic Area: **Census Tract 18, Genesee County, Michigan**

NOTE: Data not adjusted based on the Accuracy and Coverage Evaluation. For information on confidentiality protection, sampling error, nonsampling error, and definitions see http://factfinder.census.gov/home/en/datanotes/expplu.html.

U.S. Census Bureau

Quick Tables

QT-PL. Race, Hispanic or Latino, and Age: 2000

Geographic Area: **Michigan**

NOTE: Data not adjusted based on the Accuracy and Coverage Evaluation. For information on confidentiality protection, sampling error, nonsampling error, and definitions see http://factfinder.census.gov/home/en/datanotes/expplu.html.

Subject	All ages		18 years and over	
	Number	Percent	Number	Percent
RACE				
Total population	9,938,444	100.0	7,342,677	100.0
One race	9,746,028	98.1	7,239,684	98.6
White	7,966,053	80.2	6,028,037	82.1
Black or African American	1,412,742	14.2	958,883	13.1
American Indian and Alaska Native	58,479	0.6	39,991	0.5
Asian	176,510	1.8	128,682	1.8
Native Hawaiian and Other Pacific Islander	2,692	0.0	1,917	0.0
Some other race	129,552	1.3	82,174	1.1
Two or more races	192,416	1.9	102,993	1.4
HISPANIC OR LATINO AND RACE				
Total population	9,938,444	100.0	7,342,677	100.0
Hispanic or Latino (of any race)	323,877	3.3	200,496	2.7
Not Hispanic or Latino	9,614,567	96.7	7,142,181	97.3
One race	9,451,080	95.1	7,052,375	96.0
White	7,806,691	78.6	5,927,569	80.7
Black or African American	1,402,047	14.1	952,956	13.0
American Indian and Alaska Native	53,421	0.5	36,850	0.5
Asian	175,311	1.8	127,879	1.7
Native Hawaiian and Other Pacific Islander	2,145	0.0	1,571	0.0
Some other race	11,465	0.1	5,550	0.1
Two or more races	163,487	1.6	89,806	1.2

Source: U.S. Census Bureau, Census 2000 Redistricting Data (Public Law 94-171) Summary File, Matrices PL1, PL2, PL3, and PL4.

QT-PL. Race, Hispanic or Latino, and Age: 2000

Geographic Area: **Census Tract 17, Genesee County, Michigan**

NOTE: Data not adjusted based on the Accuracy and Coverage Evaluation. For information on confidentiality protection, sampling error, nonsampling error, and definitions see http://factfinder.census.gov/home/en/datanotes/expplu.html.

EXHIBIT 6

From: Julie Brunner
To: Robert Sills
Date: Tue, Sep 5, 2000 9:34 AM
Subject: Mercury from the auto shredder

Bob,

I estimated mercury emissions from the auto shredder using the following assumptions.

Each mercury switch contains 0.8 to 1.0 g of Hg per switch.

A study by the Minnesota Pollution Control Agency - "Mercury Switch Collection Study" found 43 switches per 100 vehicles in a sampling of vehicles that were to be recycled.

Since the shredder in PTI.92-00 is going to process a maximum of 60 tons/hr of scrap and assuming a scrapped car weights approximately 1.2 tons, the following amount of mercury could potentially be processed:

43 switches/100 vehicles x 1.0 g Hg x 2.2x10(-3) lb/g x 60 tons/hr x 1 vehicle/1.2 tons = 0.0473 lb/hr of Hg

or if the switch was 0.8 g then "" = 0.038 lb/hr of Hg

If the control efficiency of the cyclone and wet scrubber on the shredder is:

cyclone = 50%
wet scrubber = 90%

then the amount of Hg that could potentially be emitted to the atmosphere is the following:

0.038 lb/hr Hg x (1 - 0.5) x (1 - 0.9) = **0.0019 lb/hr Hg**

0.047 lb/hr Hg x (1 - 0.5) x (1 - 0.9) = **0.0024 lb/hr Hg**

Max PTE (8760 hrs/yr) = 16 to 21 lbs/yr Hg
Aver PTE (2080 hrs/yr) = 4 to 5 lbs/yr Hg

If you have any questions, please call. Please let me know if I need an hours limit in the permit due to mercury emissions.

Thank You,

Julie L. Brunner
Air Quality Division
General Manufacturing Unit
E-mail: brunnejl@state.mi.us
Phone: (517) 373-7088

CC: Joy Taylor

From: Julie Brunner
To: Robert Sills
Date: Tue, Sep 5, 2000 10:51 AM
Subject: auto shredder -PTI. 92-00

I talked to the applicant and he said at maximum he would like to operate 10 hrs per day and 6 days per week. (3120 hrs/yr)

Mercury emissions would be estimated at 6 lbs per year to 7.5 lb/yr using these operating hours.

Please let me know if this is a problem.

Thank You,

Julie L. Brunner
Air Quality Division
General Manufacturing Unit
E-mail: brunnejl@state.mi.us
Phone: (517) 373-7088

EXHIBIT 7

From: Joy Taylor
To: Robert Sills
Date: Thu, Sep 7, 2000 8:52 AM
Subject: Re: Fwd: Mercury from the auto shredder

Bob, it is likely that the mercury emitted would be released in the elemental form. While I don't have data to back this up, we hope to gather some data from one of these types of facilities using the Tekran mercury monitor.

As you know with the state, regional and national efforts to virtually eliminate mercury emissions it is best to reduce the emissions to the lowest levels achievable. I am more comfortable with the 4-5 lbs/yr of mercury estimate rather than the 16-21 lbs/year. As you know, these amounts (~20-50 lbs/yr) get into the grey area of having to justify local impacts to require reduced emissions.

Also, one other consideration on the controls - typically control of elemental mercury is achieved by activated carbon injection w/ a baghouse. Wet scrubbers are typically effective for oxidized mercury, but not elemental and if any of the mercury is captured by the wet scrubber, proper management of the waste water is needed. Of course these considerations are not applicable IF the switches are removed in the first place.

....lets talk more about this in person.

>>> Robert Sills 09/05 11:04 AM >>>
Joy, I asked Julie to send this estimation to you as well as me because I wanted your opinion on the Hg emission quantities.

The subject permit application is for a metal shredder / recycler. Not a thermal process. The draft permit conditions include a condition that all mercury switches from vehicles, appliances, etc. be removed prior to shredding, but Julie's emission estimates assume that this does not occur.

Would the mercury emitted likely be gaseous, in the elemental state, since it originates from electrical switches and the process is not thermal?

Would the quantities potentially emitted assuming 8760 hrs/yr operation be of enough concern to warrant a permit condition limiting their hours of operation to 40 hrs/wk (as the company stated they planned to do in their application)?
Any other opinions or recommendations?

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

Robert Sills
Toxicology Specialist
MDEQ Air Quality Division, Toxics Unit
P.O. Box 30260
Lansing MI 48909

ph. (517)-335-6973
fax (517)-241-7499
internet: sillsr@state.mi.us

9-7-00

Phone conversation w/ Bob Sills

1. Sawill would not be able to run continuously (8760 hrs/yr) #6 to 7.5 lbs/yr hrs would be the estimated emission based on the proposed operations hours.

EXHIBIT 8

From: Robert Sills
To: Julie Brunner
Date: Wed, Aug 30, 2000 10:17 AM
Subject: S & S Metals Processing, Genesee Co.: Lead emissions and impacts

Julie, I have reviewed your information sheet which included the estimated potential lead emissions and impacts for the subject facility. For concerns for long term depositional impacts to soils, and subsequesnt exposure of children to that lead in topsoil, an annual averaging time is preferred over short-term impact modeling. Therefore, from the information sheet you provided, we calculated the modeled lead ambient air impact (maximum GLC) as 0.0015 ug/m3 on an annual average, for the scenario which included a 50 ft. stack.

Previously, I have evaluated the impacts of other facility's lead emissions to air and to soil via deposition, and to children's blood lead levels with exposure to those incremental increases, while also accounting for background lead exposures via air, soil, food, and drinking water. Those other facilities, and their annually averaged maximum modeled ground level concentrations (which is a key determinant of deposition to soil) are: Genesee Power (0.00227 ug/m3); Central Wayne Air Quality and Energy Recovery (0.00038 ug/m3); Select Steel (0.0045 ug/m3); and City Medical Waste Services (0.0059 ug/m3). In all of these cases, the modeling of the lead emission's impacts to children's blood lead levels were undetectable or were very small, under various assumptions including those with children with high exposures and elevated blood lead levels. The EPA, in evaluating the Select Steel impacts as part of their investigation of a complaint to their Office of Civil Rights, characterized the lead impacts as "de minimis". For all of these facilities, AQD has found the impacts to to acceptably low and approvable.

The modeled lead impact for the S & S facility, 0.0015 ug/m3 annually averaged, may be compared to these other four assessments. Although some of the parameters for the blood lead model may vary somewhat, it is reasonable to conclude that this impact from the S & S facility would also have very low impacts which would fall in the range of the other assessments listed above. Therefore, without modeling of the blood lead level impacts, the emissions resulting in an annually averaged air impact of 0.0015 ug/m3 may be considered to be acceptably low and approvable, based on that comparison.

It is important to note that we have not developed a threshold impact level which would signify a criterion for acceptable lead air and soil depositional impacts. If you should develop other emission control options for this facility, resulting in ambient air impacts higher than that addressed in this note, please forward that to me for case-by-case consideration.

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

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EXHIBIT 9

MMWR Weekly March 02, 2001 / 50(08);140-3

Blood and Hair Mercury Levels in Young Children and Women of Childbearing Age --- United States, 1999

Mercury (Hg), a heavy metal, is widespread and persistent in the environment. Exposure to hazardous Hg levels can cause permanent neurologic and kidney impairment (*1--3*). Elemental or inorganic Hg released into the air or water becomes methylated in the environment where it accumulates in animal tissues and increases in concentration through the food chain. The U.S. population primarily is exposed to methylmercury by eating fish. Methylmercury exposures to women of childbearing age are of great concern because a fetus is highly susceptible to adverse effects. This report presents preliminary estimates of blood and hair Hg levels from the 1999 National Health and Nutrition Examination Survey (NHANES 1999) and compares them with a recent toxicologic review by the National Research Council (NRC). The findings suggest that Hg levels in young children and women of childbearing age generally are below those considered hazardous. These preliminary estimates show that approximately 10% of women have Hg levels within one tenth of potentially hazardous levels indicating a narrow margin of safety for some women and supporting efforts to reduce methylmercury exposure.

CDC's NHANES is a continuous survey of the health and nutritional status of the U.S. civilian, noninstitutionalized population with each year of data constituting a representative population sample. A household interview and a physical examination were conducted for each survey participant. During the physical examination, blood was collected by venipuncture for all persons aged ≥1 year and hair samples, consisting of approximately 100 strands, were cut from the occipital position of the head of children aged 1--5 years and women aged 16--49 years. Whole blood specimens were analyzed for total Hg and inorganic Hg for children aged 1--5 years and women aged 16--49 years by automated cold vapor atomic absorption spectrophotometry in CDC's trace elements laboratory. The detection limit was 0.2 parts per billion (ppb) for total Hg and 0.4 ppb for inorganic Hg (*4*). Hairs of 0.6 inches (1.5 cm) closest to the scalp (approximately 1 month's growth) were analyzed for total Hg concentration using cold vapor atomic fluorescence spectroscopy (*5*). The limit of detection for total Hg in hair varied by analytic batch; the maximum limit of detection (0.1 parts per million [ppm]) was used in these analyses. Blood Hg levels less than the limit of detection were assigned a value equal to the detection limit divided by the square root of two for calculation of geometric mean values.

The geometric mean total blood Hg concentration for all women aged 16--49 years and children aged 1--5 years was 1.2 ppb and 0.3 ppb, respectively; the 90th percentile of blood Hg for women and children was 6.2 ppb and 1.4 ppb, respectively (Table 1). Almost all inorganic Hg levels were undetectable; therefore, these measures indicate blood methylmercury levels. The 90th percentile of hair Hg for women and children was 1.4 ppm and 0.4 ppm, respectively. Geometric mean values were not calculated for hair Hg values.

Reported by: Center for Food Safety and Applied Nutrition, Food and Drug Administration. US Environmental Protection Agency. National Energy Technology Laboratory, Dept of Energy. National Marine Fisheries Laboratory, National Oceanic and Atmospheric Administration. National Center for Health Statistics; National Center for Environmental Health, CDC.

Editorial Note:

The NHANES1999 blood and hair Hg data are the first nationally representative human tissue measures

of the U.S. population's exposure to Hg. Previous estimates of methylmercury exposure in the general population were based on exposure models using fish tissue Hg concentrations and dietary recall survey data (*1*). The NRC review provided guidance to the Environmental Protection Agency (EPA) for developing an exposure reference dose for methylmercury (i.e., an estimated daily exposure that probably is free of risk for adverse effects over the course of a person's life) (*3*). The NRC report recommended statistical modeling of results from an epidemiologic study conducted in the Faroe Islands near Iceland, where methylmercury exposures are high because of the large amount of seafood eaten by the local population. Results of this study were used to calculate a benchmark dose (BMD), an estimate of a methylmercury exposure in utero associated with an increase in the prevalence of abnormal scores on cognitive function tests in children. The lower 95% confidence limit of the BMD (BMDL*) was recommended to calculate the EPA reference dose. The NRC committee recommended a BMDL of 58 ppb Hg in cord blood (corresponding to 12 ppm Hg in maternal hair) (*3*). In the NHANES 1999 sample, there were no measurements of blood values ≥58 ppb or hair values ≥12 ppm. A margin-of-exposure analysis (i.e., an evaluation of the ratio of BMDL to estimated population exposure levels) showed ratios of <10 when comparing BMDL with NHANES 1999 estimates of the 90th percentile for blood and hair Hg levels in women of childbearing age. Margin-of-exposure measures of this magnitude indicate a narrow margin of safety (*3*) and suggest that efforts aimed at decreasing human exposure to methylmercury should continue.

The findings in this study are subject to at least three limitations. First, the ratio of Hg in cord and maternal blood is uncertain. The NRC committee summarized some studies that suggest that cord blood values may be 20%--30% higher than corresponding maternal blood levels. However, other studies suggest that the ratio is closer to 1:1 (*3*); therefore, the NHANES values may not be directly comparable to BMDL recommended by NRC. Second, NHANES cannot provide estimates of Hg exposure in certain highly exposed groups (e.g., subsistence fishermen and others who eat large amounts of fish). Published data from studies of highly exposed U.S. populations indicated that some persons attain Hg tissue levels above BMDL (*1*). Third, the sample size of NHANES 1999 was small and the 1999 survey was conducted in only 12 locations. More data are needed to confirm these findings.

The long-term strategy for reducing exposure to Hg is to lower concentrations of Hg in fish by limiting Hg releases into the atmosphere from burning mercury-containing fuel and waste and from other industrial processes. On the basis of data from EPA's National Toxics Inventory, air emissions of Hg decreased approximately 21% during 1990--1996, largely because of regulations for waste incineration (*7*). EPA expects this trend to continue as regulations are implemented for waste incineration and chlorine production facilities and are developed for electric power utilities (*8,9*). Fish is high in protein and nutrients and low in saturated fatty acids and cholesterol and should be considered an important part of the diet. The short-term strategy to reduce Hg exposure is to eat fish with low Hg levels and to avoid or to moderate intake of fish with high Hg levels. State-based fish advisories and bans identify fish species contaminated by Hg and their locations and provide safety advice (http://www.epa.gov/ost/fish†). The Food and Drug Administration advises that pregnant women and those who may become pregnant should not eat shark, swordfish, king mackerel, and tile fish known to contain elevated levels of methylmercury. Information is available at http://www.fda.gov/bbs/topics/ANSWERS/2001/advisory.html †.

U.S. population estimates of Hg tissue levels by race/ethnicity, region, and fish consumption will become available after 2 additional years of NHANES data collection. NHANES will provide the opportunity to measure tissue Hg levels and to monitor the effectiveness of continuing efforts to reduce methylmercury exposure in the U.S. population.

References

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*A BMD of 85 ppb Hg in cord blood or 17 ppm Hg in maternal hair was estimated to result in an increase in the proportion of abnormal scores on the Boston Naming Test for children exposed in utero from an estimated background prevalence of 5% to a prevalence of 10% (*6*). BMDL recommended by NRC is the lower 95% confidence bound of the BMD.

† References to sites of nonCDC organizations on the World-Wide Web are provided as a service to *MMWR* readers and do not constitute or imply endorsement of these organizations or their programs by CDC or the U.S. Department of Health and Human Services. CDC is not responsible for the content of pages found at these sites.

Table 1

TABLE 1. Selected percentiles and geometric means of blood and hair merc (Hg) concentrations for children aged 1–5 years and women aged 16–49 yea National Health and Nutrition Examination Survey, United States, 1999

	Geometric		Selected percentiles (95% CI*)				
	No.	mean (95% CI)	10th	25th	50th	75th	
BloodHg†							
Children	248	0.3 (0.2–0.4)	<LOD§	<LOD	0.2 (0.2–0.3)	0.5 (0.4–0.8)	1.4
Women	679	1.2 (0.9–1.6)	0.2 (0.1–0.3)	0.5 (0.4–0.7)	1.2 (0.8–1.6)	2.7 (1.8–4.5)	6.2
Hair Hg¶							
Children	338	—**	<LOD	<LOD	<LOD	0.2 (0.1–0.4)	0.4
Women	702	—	<LOD	<LOD	0.2 (0.2–0.3)	0.5 (0.4–0.8)	1.4

* Confidence interval.
† Parts per billion.
§ Limit of detection.
¶ Parts per million.
** Not calculated. Proportion <LOD too high to be valid.

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EXHIBIT 10

ATSDR ToxFAQs

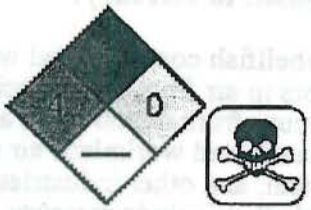
Mercury

CAS# 7439-97-6

April 1999

Mercury
Hg
GIF Image
XYZ File

Search ChemFinder



NFPA Label Key

Material Safety Data Sheet
(University of Utah)

Agency for Toxic Substances and Disease Registry

This fact sheet answers the most frequently asked health questions about mercury. For more information, you may call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to mercury occurs from breathing contaminated air, ingesting contaminated water and food, and having dental and medical treatments. Mercury, at high levels, may damage the brain, kidneys, and developing fetus. This chemical has been found in at least 714 of 1,467 National Priorities List sites identified by the Environmental Protection Agency.

What is mercury?

Mercury is a naturally occurring metal which has several forms. The metallic mercury is a shiny, silver-white, odorless liquid. If heated, it is a colorless, odorless gas.

Mercury combines with other elements, such as chlorine, sulfur, or oxygen, to form inorganic mercury compounds or "salts," which are usually white powders or crystals. Mercury also combines with carbon to make organic mercury compounds. The most common one, methylmercury, is produced mainly by small organisms in the water and soil. More mercury in the environment can increase the levels of methylmercury that these small organisms make.

Metallic mercury is used to produce chlorine gas and caustic soda and also used in thermometers, dental

fillings, and batteries. Mercury salts are used in skin-lightening creams and as antiseptic creams and ointments.

What happens to mercury when it enters the environment?

- Inorganic mercury (metallic mercury and inorganic mercury compounds) enters the air from mining ore deposits, burning coal and waste, and from manufacturing plants.
- It enters the water or soil from natural deposits, disposal of wastes, and volcanic activity..
- Methylmercury may be formed in water and soil by small organisms called bacteria.
- Methylmercury builds up in the tissues of fish. Larger and older fish tend to have the highest levels of mercury.

How might I be exposed to mercury?

- Eating fish or shellfish contaminated with methylmercury.
- Breathing vapors in air from spills, incinerators, and industries that burn mercury-containing fuels.
- Release of mercury from dental work and medical treatments.
- Breathing contaminated workplace air or skin contact during use in the workplace (dental, health services, chemical, and other industries that use mercury).
- Practicing rituals that include mercury.

How can mercury affect my health?

The nervous system is very sensitive to all forms of mercury. Methylmercury and metal vapors are more harmful than other forms, because more mercury in these forms reaches the brain. Exposure to high levels of metallic, inorganic, or organic mercury can permanently damage the brain, kidneys, and developing fetus. Effects on brain functioning may result in irritability, shyness, tremors, changes in vision or hearing, and memory problems.

Short-term exposure to high levels of metallic mercury vapors may cause effects including lung damage, nausea, vomiting, diarrhea, increases in blood pressure or heart rate, skin rashes, and eye irritation.

How likely is mercury to cause cancer?

There are inadequate human cancer data available for all forms of mercury. Mercuric chloride has caused increases in several types of tumors in rats and mice, while methylmercury increased kidney tumors in male mice. The EPA has determined that mercuric chloride and methyl mercury are possible human carcinogens.

How can mercury affect children?

Very young children are more sensitive to mercury than adults. Mercury in the mother's body passes to the fetus and can pass to a nursing infant through breast milk. However, the benefits of breast feeding may be greater than the possible adverse effects of mercury in breast milk.

Mercury's harmful effects that may be passed from the mother to the developing fetus include brain damage, mental retardation, and incoordination, blindness, seizures, and an inability to speak. Children poisoned by mercury may develop problems of their nervous and digestive systems and kidney damage.

How can families reduce the risk of exposure to mercury?

Carefully handle and dispose of products that contain mercury, such as thermometers or fluorescent light bulbs. Do not vacuum up spilled mercury, because it will vaporize and increase exposure. If a large amount of mercury has been spilled, contact your health department. Teach children not to play with shiny, silver liquids.

Properly dispose of older medicines that contain mercury. Keep all mercury-containing medicines away from children.

Pregnant women and children should keep away from rooms where liquid mercury has been used.

Learn about wildlife and fish advisories in your area from your public health or natural resources department.

Is there a medical test to show whether I've been exposed to mercury?

Tests are available to measure mercury levels in the body. Blood or urine samples are used to test for exposure to metallic mercury and to inorganic forms of mercury. Mercury in whole blood or in scalp hair is measured to determine exposure to methylmercury. Your doctor can take samples and send them to a testing laboratory.

Has the federal government made recommendations to protect human health?

The EPA has set a limit of 2 parts of mercury per billion parts of drinking water (2 ppb).

The Food and Drug Administration (FDA) has set a maximum permissible level of 1 part of methylmercury in a million parts of seafood (1 ppm).

The Occupational Safety and Health Administration (OSHA) has set limits of 0.1 milligram of organic mercury per cubic meter of workplace air (0.1 mg/m^3) and 0.05 mg/m^3 of metallic mercury vapor for 8-hour shifts and 40-hour work weeks.

Source of Information
Agency for Toxic Substances and Disease Registry (ATSDR). 1999. Toxicological profile for mercury. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Animal testing is sometimes necessary to find out how toxic substances might harm people and how to treat people who have been exposed. Laws today protect the welfare of research animals and scientists must follow strict guidelines.

Where can I get more information?
ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

For more information, contact:

Agency for Toxic Substances and Disease Registry
Division of Toxicology
1600 Clifton Road NE, Mailstop E-29
Atlanta, GA 30333
Phone: 1-888-422-8737
FAX: 404-639-6359

U.S. Department of Health and Human Services
Public Health Service
Agency for Toxic Substances and Disease Registry

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Last Updated April 20, 1999

ATSDR ToxFAQs

Lead

CAS# 7439-92-1

April 1993

Lead
Pb
GIF Image
XYZ File

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NFPA Label Key

Vermont SIRI MSDS Archive

Agency for Toxic Substances and Disease Registry

This fact sheet answers the most frequently asked health questions about lead. For more information, you may call the ATSDR Information Center at 1-800-447-1544. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

SUMMARY: Exposure to lead happens mostly from breathing workplace air or dust, and eating contaminated foods. Children can be exposed from eating lead-based paint chips, or playing in contaminated soil. Lead can damage the nervous system, kidneys, and the immune systems. Lead has been found in at least 922 of 1,300 National Priorities List sites identified by the Environmental Protection Agency.

What is lead?
(Pronounced led)

Lead is a naturally occurring bluish-gray metal found in small amounts in the earth's crust. It has no special taste or smell. Lead can be found in all parts of our environment. Most of it came from human activities like mining, manufacturing, and the burning of fossil fuels.

Lead has many different uses, most importantly in the production of batteries. Lead is also in ammunition, metal products (solder and pipes), roofing, and devices to shield x-rays.

Because of health concerns, lead from gasoline, paints and ceramic products, caulking, and pipe solder has been dramatically reduced in recent years.

What happens to lead when it enters the environment?

- Lead itself does not break down, but lead compounds are changed by sunlight, air, and water.
- When released to the air from industry or burning of fossil fuels or waste, it stays in air about 10 days.
- Most of the lead in soil comes from particles falling out of the air.
- City soils also contain lead from landfills and leaded paint.
- Lead sticks to soil particles.
- It does not move from soil to underground water or drinking water unless the water is acidic or "soft".
- It stays a long time in both soil and water.

How might I be exposed to lead?

- Breathing workplace air (lead smelting, refining, and manufacturing industries)
- Eating lead-based paint chips
- Drinking water that comes from lead pipes or lead soldered fittings
- Breathing or ingesting contaminated soil, dust, air, or water near waste sites
- Breathing tobacco smoke
- Eating contaminated food grown on soil containing lead or food covered with lead-containing dust
- Breathing fumes or ingesting lead from hobbies that use lead (leaded-glass, ceramics)

How can lead affect my health?

Lead can affect almost every organ and system in your body. The most sensitive is the central nervous system, the brain, the kidneys and the immune system. The effects are the same whether it is breathed or swallowed.

Exposure to lead is more dangerous for young and unborn children. Unborn children can be exposed to lead through their mothers. Harmful effects include premature births, smaller babies, decreased mental ability in the infant, learning difficulties, and reduced growth in young children. These effects are more common after exposure to **high levels** of lead.

In adults, lead may decrease reaction time, cause weakness in fingers, wrists, or ankles, and possibly affect the memory. Lead may cause anemia, a disorder of the blood. It can cause abortion and damage the male reproductive system. The connection between these effects and exposure to **low levels** of lead is uncertain.

How likely is lead to cause cancer?

The Department of Health and Human Services (DHHS) has determined that lead acetate and lead phosphate may reasonably be anticipated to be carcinogens based on studies in animals. There is inadequate evidence to clearly determine lead's carcinogenicity in humans.

Is there a medical test to show whether I've been exposed to lead?

A blood test is available to measure the amount of lead in your blood and to estimate the amount of your exposure to lead. Blood tests are commonly used to screen children for potential chronic lead poisoning. The Centers for Disease Control and Prevention (CDC) considers children to have an elevated level of lead if the amount in the blood is at least 10 micrograms per deciliter (10 µg/dL). Lead in teeth and bones can be measured with X-rays, but this test is not as readily available.

Has the federal government made recommendations to protect human health?

The Centers for Disease Control and Prevention (CDC) recommends all children be screened for lead poisoning at least once a year. This is especially important for children between 6 months and 6 years old.

The Environmental Protection Agency (EPA) requires lead in air not to exceed 1.5 micrograms per cubic meter (1.5 µg/m³) averaged over 3 months. The sale of leaded gasoline will be illegal as of December 31, 1995. EPA limits lead in drinking water to 15 micrograms per liter (15 µg/L).

The Consumer Product Safety Commission (CPSC), EPA, and the states control the levels of lead in drinking water coolers. Water coolers that release lead must be recalled or repaired. New coolers must be lead-free. Drinking water in schools must be tested for lead.

The Department of Housing and Urban Development (HUD) requires that federally funded housing and renovations, public housing, and Indian housing be tested for lead-based paint hazards. Hazards must be fixed by covering the paint or removing it.

The Occupational Safety and Health Administration (OSHA) limits the concentration of lead in workroom air to 50 µg/cubic meter for an 8-hour workday. If a worker has a blood lead level of 40 µg/dL, OSHA requires that worker to be removed from the workroom.

Glossary

Carcinogenicity:
Ability to cause cancer.
Anemia:
Low numbers of red blood cells or hemoglobin.
Ingesting:
Taking food or drink into your body.
Microgram (µg):
One millionth of a gram.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1993. Toxicological profile for lead. Atlanta: U.S. Department of Health and Human Services, Public Health Service.

Agency for Toxic Substances and Disease Registry (ATSDR). 1993. Case studies in environmental medicine: Lead toxicity. Atlanta: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information?

ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

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FAX: 404-639-6315

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